ESTeSC – Coimbra Health School

Abstract Book

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ESCOLA SUPERIOR DE TECNOLOGIA DA SAÚDE DE COIMBRA - IPC

POSTER WEEK

ESTeSC-Coimbra Health School

SCIENTIFIC COMITEE

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TITLE: ECONOMIC BURDEN OF ADR's LEADING TO HOSPITAL ADMISSION

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Introduction: These days' adverse reactions demonstrate, more and more, a large economic impact on society, in particular as regards to hospital admissions.

Aims/Objective: The objective is to evaluate the economic impact of adverse reactions leading to hospital admission.

Methods: A systematic review of the literature manifested itself through articles analysis coming from different data bases as *Pubmed* and *B-on*.

Results: Using three observational studies on the economic impact of hospital admission, analyzed the results obtained by researchers, identifying the time and study size, the length of hospitalization, associated costs and its economic impact.

Conclusion: From the study results it is confirmed that the risks associated with RAM's have great relevance when combined with economic impact. Thus, there is a need to develop new clinical practices in order to promote the safe use of medicines.

TITLE: USERS SATISFACTION WITH INFORMATION ABOUT MEDICINES

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Introduction: Ineffective communication of information on drugs is a barrier to therapeutic adherence and to the safe use of these products, which is reflected in the incidence of a 30-50% non-compliance prescription for lack of information. For this reason the users satisfaction with the drug´s information is a parameter that makes more and more sense to evaluate nowadays. **Objective**: The aim is to build tools to measure users satisfaction with information relating to drugs and complete gaps in the communication of this information.

Methods: This work was carried out a research in the following databases Pubmed, Scielo, scholar google with the keywords "*User's Satisfaction*", "*Medicines Information*", "*Tools to Assess Satisfaction in Health*".

Results: Evaluation of satisfaction with the information provided to users on drugs can be made by various instruments and is essential to evaluate the quality of the transmition of that information. An example widely used for this type of evaluation is the Satisfaction with Information about Medicines Scale, which is based on a questionnaire directed to the amount of information that users receive on drugs of their prescriptions. This able to assess whether the information received is sufficient to ensure compliance with prescription and awareness of the risks involved.

Another example is the Pharmacy Services Questionnaire, a questionnaire that assesses patient satisfaction with the services provided pharmaceutical care. It is a multidirectional tool and was designed to be used in population samples, primary care and outpatients.

Conclusion: Currently there are few assessment tools to evaluate users satisfaction on drugs. The perspective of the users regarding the information offered on drugs is essential for the quality of provided pharmaceutical care and contributes to the rational use of medication.

TITLE: CARNITINE: IMPORTANCE IN PEDIATRIC TREATMENT WITH VALPROIC ACID

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Introduction: Valproic acid (VPA) is a broad-spectrum antiepileptic drug and a simple fatty acid used as substrate for the fatty acid ß-oxidation pathway, which takes place primarily in mitochondria. Acute VPA intoxication can occur due to intentional or accidental overdose and rare serious complications may also occur in some patients receiving VPA chronically, including VPA-induced hepatotoxicity (VHT) and VPA-induced hyperammonaemic encephalopathy (VHE). Some data suggest that VHT and VHE may be promoted by carnitine (amino acid derivative) deficiency that can interfere with mitochondrial ß-oxidation[(1)(2)(3)].

Aims: To reunite all the evidence concerning the use of carnitine supplementation in the management of VHE, VHT and acute VPA overdose.

Methods: Research of articles published through search engines, in Portuguese and English, using keywords such as carnitine, acid valproic, children and pediatric.

Results: Several studies or isolated clinical observations have suggested the potential value of oral L-carnitine in reversing carnitine deficiency or preventing its development as well as some adverse effects due to VPA (VHT and VHE)[(2)].

Conclusion: Carnitine supplementation is now recommended by some scientific committees and textbooks, especially paediatricians[(2)], given that may play a role in preventing VHT, a rising ammonia level or high VPA levels[(3)]. However, these issues deserve further investigation in controlled and randomized studies to evaluate the clinical value and the appropriate dosage of L-carnitine[(2)].

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TITLE: PHARMACOGENOMICS IN ONCOLOGY

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Introduction

Pharmacogenomics studies the influence of genetic variation in response to drugs in subjects. Pharmacogenomics intends to develop means to optimize drug therapeutics, according to subjects' genotype, to ensure maximum effectiveness with less adverse effects. Oncology research has shown that cancer is a genetic disease. Carcinogenesis is the result of mutations in oncogenes and tumor suppressor and chromosomal stability. Pharmacogenetics and Pharmacogenomics has very promising possibilities for the treatment of cancer, aiming to customize treatment based on the genetic characteristics of the individual, avoiding the use of toxic chemotherapy.

Aims/Objective

The purpose of this study is understand pharmacogenomics and pharmacogenetis role's in cancer.

Methods

Data was collected in databases like: B-on, Pubmed and Google Scholar, using Keywords "*pharmacogenomics*", "*pharmacogenetis*" and "*cancer*".

Results

The pharmacogenomics is particularly important in the field of oncology, since it uses as conventional therapy (chemotherapy) drugs with a narrow therapeutic window. Therefore, knowledge of the genetic variations of an individual predictive of the response to a particular drug. This leads to the optimization of treatment, increasing the therapeutic window of drug used (safer and more effective drugs), allowing personalized therapy.

Conclusion

Oncology is a field where the intervention of pharmacogenomics could have a positive impact. In this area of medicine involving the common therapeutic drugs with a narrow therapeutic window, a small error may give trigger delicate situations for the patient

TITLE: QUALITY ASSESSMENT OF DRUGS IN ELDERLY

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Introduction: The elderly of the Portuguese population has progressively developed in the last decades. With the increasing number of senior individuals, has been found simultaneously the increased consumption of drugs, due to the prevalence of chronic diseases with the progress of age. Thus, it is necessary to conduct detailed assessment of the quality of medicines use, to provide welfare and safety of these users, adapting the drugs to their needs and specificities.

Objective: Evaluate the quality of medication use in the elderly, knowing and describing the most diverse standard analytical techniques.

Methods: The research and data collection was carried out between March 2 and April 15, 2015, using databases and appropriate articles.

Results: Research suggests that population aging has been a world-wide phenomenon, where the WHO predicts that by 2015, there will be more than 1.2 billion individuals who have more than 60 years. Most of these individuals have chronic diseases and so take multiple medications. Thus, assessment tools tend to be the most advantageous, by improving the quality of the elderly population. Offering them better adaptation and referent information on their medication with all the physiological and psychological changes, take into account.

Conclusion: The data concluded that in view of an aging and polymedicated population becomes increasingly important to provide the rational and safe use of medicines, in order reduce possible side effects or interactions.

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TITLE: MEDICALIZATION OF CURRENT SOCIETY

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Introduction: Medicalization is the introduction of new diseases in which situations considered normal are defined as diseases and disorders[(1)(2)]. The society is increasingly tempted to consume drugs because these are seen as a source of healing, encouraged by civil and medical society that sees consumption as a means of profit [(3)]. This temptation leads to a rise of doubts about the need for treatment and means that there is an increase in demand at the level of prescription orders and hence the purchase of medicines, mainly for social pathologies[(3)]. **Aims:** To understand the context of medicalization in today's society, its cause, the impact on people's health and at an economic level. **Methods:** A literature survey was conducted in March and April 2015, using the terms: "*medicalization*", "*pharmacoeconomics*", "*economic analysis*" and "*cost-benefit*". The search was limited to articles published between January 2008 and April 2015, in English, Portuguese and Spanish languages. **Conclusion:** The responsibility of medicalization lies with the consumers, health professionals, politics, the pharmaceutical industry and the media[(2)(4)(5)]. The economic evaluation of medicines is a helpful tool for decision making. Pharmacoeconomics evaluates the cost/benefit/effectiveness of the use of the product that support drug financing decision in Portugal[(6)]. Demedicalization is crucial, but not easy, because in addition to being a source of solving the people's "problems", it is also, after all, a powerful business [(7)].

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TITLE: DO YOU KNOW WHAT DIETARY SUPPLEMENTS ARE?

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Introduction: The Dietary Supplements are natural or chemical products, with simple or complex composition, intended to supplement a balanced diet, fill certain failure or improve any condition.

Objective: This study aims to basically alert to the possible adverse effects that may arise from take this type of substances, doing a literature review of the topic.

Methods: It was made a bibliographical research in online databases was prepared through research of articles from 2010 to 2015, in the databases LILACS, PubMed / Medline, SciELO, Embase and Biomed Central, using the keywords *Food Supplements and Counseling*.

Results: On the basis of the consumption in Portugal, it is clear that the category of vitamins is the most used food supplements, and that the main reason is to combat fatigue and increase the concentration.

Conclusion: In conclusion, we believe it is essential to have special care with these products and make aware the users of the fact that the Dietary Supplements are not harmless and should be taken consciously and with professional supervision.

TITLE: PHARMACOLOGICAL TREATMENT OF ANDROGENETIC ALOPECIA

Authors*: Humberto Ferreira, Joana Feiteira, Micaela Morais, Sara Santos, Jorge Balteiro*

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Alopecia is a chronic inflammatory skin disease, an autoimmune disorder resulting from a combination of genetic and environmental factors. Among the different types, androgenic alopecia is the most common, with a hereditary character. Our aim is to identify existing drugs for alopecia treatment.

To treat this condition, we can apply minoxidil topically, a drug well known in this area, which stimulates hair growth. Adverse reactions are irritant dermatitis, allergic contact dermatitis and diffuse hypertrichosis. Orally administration, should avoid contact with eyes, mouth, mucous membranes, infected or inflamed skin and blood pressure should be monitored regularly. This drug should not be used during pregnancy or lactation and we must have particular attention to men over 50 and patients with cardiovascular, liver or kidney disease. Minoxidil is applied twice daily in dry scalp and hair. Finasteride, a teratogenic excreted in semen, is also widely used but should not be handled by pregnant or women prone to pregnancy. The recommended dose is 1 mg per day and should be maintained indefinitely, because the baldness process continues after treatment.

Other less known drugs: the alpha-estradiol; ketoconazole shampoo and aminexil. Bimatoproste and latonoproste are analogous prostaglandins with stimulating effects on hair growth and spironolactone, a synthetic steroid, inhibits androgen synthesis.

In androgenic alopecia, to better understand this disease and recommend an ideal treatment, we must identify the underlying mechanisms and genes involved.

TITLE: SILDENAFIL AND TADALAFIL ROLE IN THE TREATMENT OF ERECTILE DYSFUNCTION

Authors*: Jéssica Guerreiro, Liliana Valente, Márcia Bastos, Jorge Balteiro*

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Erectile Dysfunction (ED) tends to increase with age and is the inability to achieve and / or maintain an erection suitable for sexual activity. To combat this problem there are some pharmacological and non-pharmacological treatment options. However, the first option, there are drugs with different metabolic characteristics, such as Sildenafil and Tadalafil may exert a combined action.

The aim is to show that both drugs are involved in the treatment of erectile dysfunction and knows what their effects when combined, but also awaken hope in men with this disease and combat prejudice.

Sildenafil should not be prescribed with other drugs indicated for sexual activity, however, it was found that their combination therapy with tadalafil produce benefits such patients, particularly in severe situations and when administered at low doses in the initial phase of treatment results because positive in erectile function by endothelial repair vascular penis.

You can use the combined drug therapy. A low dose of Tadalafil administered once daily, long-term combined with Sildenafil as needed in the initial phase of treatment, can improve erectile function promoting erectile hardness, the confidence of couples and sexual experience with quickly and effectively. Currently erectile dysfunction is a condition for which treatment is relatively successful and with positive results.

TITLE: HORMONE REPLACEMENT TREATMENT (HRT)

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Nowadays, women live about a third of her life in post menopause due to decreased mortality. At menopause, due to decreased slowly and gradually of estrogen and other hormones women show different symptoms, such as vasomotor symptoms, sleep alterations, weight gain, uterine hemorrhage, urogenital and sexual disorders and mood disturbances and memory, amending their quality of life.

In order to control changes is used Hormone Replacement Treatment (HRT) which is based on the administration of progestins and estrogens, used separately or in combination.

This is currently the most widely used treatment, however it is necessary to take into account, that despite its many benefits there are some associated risks

TITLE: THERAPEUTIC USE OF IMMUNOGLOBULIN

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Immunoglobulins are used therapeutic level to confer immunity to some diseases. This immunity may be active or passive depending, respectively, the case of direct administration or induce their formation in the body.

There immunoglobulins of human origin, obtained from plasma, and animal, being provided for active immunization and are called 'sera'. For example, the immunoglobulin against hepatitis B and the human immunoglobulin against the D antigen.

The vaccines (active immunity) can be differentiated in vivid, inactivated or toxoids. Depending on its composition and way of operation. For example, the vaccine against hepatitis B and the flu shot.

TITLE: EMERGENCY CONTRACEPTION

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Emergency Contraception is a method to prevent an unwanted pregnancy after unprotected sexual intercourse or in case of contraceptive method failure. It is the only method that can be used to prevent pregnancy after intercourse and can be used in conjunction with other contraceptive method. In the case of adolescents, access to this method is particularly important because it is quite often young people have little experience in the use of contraception, hence it is important to access to information. Should always be offered in cases of rape and after use is recommended that subsequent acts of intercourse be protected by a more reliable barrier method.

There are now two different therapeutic approaches: Levonelle in that emergency contraception can be made until 72 hours after unprotected or inadequately protected intercourse, is not effective as frequent contraceptive, has an efficacy of 95 % if taken 24 hours after intercourse, and the most common side effects are mild nausea, malaise and possible delay in menstruation; and ellaOne in the total effectiveness is proven to 120 hours after intercourse, can affect the regular contraceptive pill if not used additional protection after its take , with side effects similar to the previous.

The effectiveness of Levonelle is greater the faster the take after intercourse instead of 100% ellaOne that maintains its effectiveness over the 5 days. This method is not abortifacient and has no teratogenic effects. Every woman should adopt adequate contraception to their lifestyle.

TITLE: PHARMACOTHERAPEUTIC USE OF VITAMIN D

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Vitamins are organics substances presents in divers aliments in few quantity and indispensable to the organism functionality. The vitamins can be divided in two groups: water-soluble and fat-soluble, being soluble in water and soluble in lipids/insoluble in water, respectively.

The D vitamin, fat-soluble vitamin, is of great importance due to its control action and homeostasis maintenance of calcium and phosphor in the organism, being directly connected to bone mineralization.

The main source of vitamin D is the skin itself, where its synthesis is stimulated by UV radiation, when 7-dehydrocholesterol is transformed in cholecalciferol (D3 vitamin). Also can be found in a few aliments like in fat fish oils and egg yolk.

D Vitamin deficiency shows diverse clinical manifestations. In child's, develops rickets wherein the bone mineralization doesn't occur appropriately. In adults, is developed osteomalacia characterized by muscle pain, bone weakness and neuromuscular irritability or further accelerate the loss of bone mass, developing osteoporosis.

This vitamin has a pharmacotherapeutic use in osteoporotic disease, in treatment of psoriasis as well as in rickets of osteomalacia.

Once the D vitamin synthesis is provoked by UV radiation emitted by the sun, individuals in the Nordics have a diminution of the quantity of this vitamin. To overcome this obstacle, being this vitamin important for the organism, these people have to resort to vitamin supplements.

TITLE: THE USE OF PLACEBO IN CLINICAL TRIALS IN CNS DISEASES

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A placebo is an inert substance with no specific action in the symptoms or diseases exhibited by the patients. Although no pharmacological activity is present, the placebo may produce a therapeutic effect due to the positive expectations of the patient.

The use of placebos in clinical trials has generated controversy due to the inseparable concepts of clinical research and ethics. To address this issue, the Helsinki Declaration was developed for the medical community in order to establish guidelines to which clinical investigation must comply.

Studies in the fields of analgesia, Parkinson's disease and depression showed no significant differences from the results compared between placebo and active group; although in some cases the placebo was more effective.

Nonetheless, it is necessary to develop more research projects with the aim of better understanding this effect and increase the advantages that it may bring.

TITLE: THE CLINICAL USE OF GENETIC POLYMORPHISMS

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Pharmacogenomics / pharmacogenetics is based on the existence of genetic polymorphisms in the population.

Genetic polymorphisms may be observed both in pharmacokinetics and pharmacodynamics, leading to the attainment of several responses in the administration of the same drug in different individuals.

Prior knowledge of polymorphisms is essential in the planning of new molecules, which allows the drug to adapt to a particular individual. However, the use of this information creates multiple ethical issues in the practice of clinical trials.

The planning of clinical trials has genetic factors that have to be accounted for the creation of drugs with a high percentage of safety / efficacy.

Because clinical trials are conducted on humans, ethics are an aspect to be considered, since they must comply in a very narrow ethical and legal standards that are founded on the respect for the dignity of human beings.

Thus, it is extremely important to have a balance between the benefits and risks in the evaluation of drugs in clinical trials.

TITLE: BIOLOGICAL AGENTS IN PSORIASIS TREATMENT

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Psoriasis is an inflammatory, genetic and chronic disease, characterized by hyperplasia of the skin; in fact the associated lesions may achieve most of the body surface.

The pathology can manifest itself through different forms and degrees, existing various kinds of disease, being the most common: Vulgaris and plate's psoriasis, Inverse psoriasis, Guttate psoriasis and Pustular psoriasis.

The biological agents have had a positive impact in psoriasis treatment. It's estimated that in Portugal, about 6000 patients are under a biological therapeutically indication. Nowadays, there are available 4 cytokines modulators approved by EMA (European Medicines Agency) for psoriasis treatment, they are Adalimumab (Humira®, Abbvie), Etanercept (Enbrel®, Pfizer), Infliximab (Remicade®, Janssen Biotech) e Ustekinumab (Stelara®, Janssen Biotech).

In the synthesis of such drugs are proteins produced by living organisms, using the recombinant DNA technique.

Because of its effectiveness, lack of drug interactions and safety profile, treatment with biological agents, allowed an important advance in psoriatic treatment.

TITLE: THERAPEUTIC DRUG MONITORING

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Therapeutic drug monitoring (TDM) aims to optimize the therapeutic response of drugs, maximizing the pharmacological effect and reducing the incidence of adverse effects.
It is practices which do not need to be applied to all drugs. Its applicability is justified only to drugs with narrow therapeutic windows, marked variability pharmacokinetics, known side effects, and the most studied classes are: antiepileptic drugs, antiarrhythmic drugs, Antibiotics, bronchodilators, and immunosuppressants.
This procedure in order to be effective requires a multidisciplinary approach, and the team should be the result of collaboration of doctors, nurses and pharmacists.
Over the past few years, the emergence of immunochemical assays has become to be more rapid, reliable and less labor-intensive tests.
After laboratory analysis, the interpretation of results is performed as aid of computer programs that use Clinical Pharmacokinetics, preferably, the Bayesian methodology. Despite the high cost of TDM procedure it has a positive balance, to the extent that the results presented are very beneficial, eventually offset the funds invested.
In short, we should continue to invest in the progress of TDM, never forgetting that in a perspective of public health, measures that improve value for money, always has as main objective, the improvement for patients.

TITLE: PNV VACCINES

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A vaccine is a substance derived, or chemically similar, to a particular infectious agent causing disease. This substance is recognized by the immune system of the vaccinated individual and raises the part of a response that protects a disease associated to the agent. Therefore the vaccine induces in the immune system who to react if it had actually been infected by the agent.
The PNV is the vaccine takes calendar recommended by health authorities in Portugal. The PNV vaccines recommended to be taken on a routine basis, and their age's vaccination. The vaccines included in the PNV are administered universal and free to the greatest possible number of citizens. There are others that do not appear in the PNV for not being recommended but are not less important.
The conservation, maintenance, prevention, equipment and forms of application are important aspects connected with vaccines and will be extremely referred to in this work.

TITLE: PHYTOTHERAPY - USE OF MEDICINAL PLANTS

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Phytotherapy is a word which derives from the Greek "phyton" meaning plant, and "therapy", treatment. This therapy carried out through the use of plants. Thus, the medicinal plants are one of the oldest forms of medical practice of mankind.

The plants that are more used are: Aloe vera, Garlic, Camomile, Melissa, Ginger, Watercress, Mint, and others.

There are benefits and risks associated with the use of medicinal plants.

Sometimes the medicinal plants have effects higher than those of conventional medicines.

Phytotherapy is regarded as a therapy with cost-effective and less expensive than the drugs bought in allopathic pharmacy and can be purchased without a prescription; Medicinal plants and remedies are more effective than allopathic medicine for certain diseases; And finally, this type of treatment (natural treatment, like this has been classified by population) can be used effectively for the detoxification process of the natural body.

Inappropriate use and ignorance of the effects of medicinal plants products can lead to adverse reactions and toxicity, many times because of a self-medication. Ignorance of plant constituents is one of the biggest risk factors. There is the possibility of masking pathology.

The number of researches in the field has been increased every year. The efforts to integrate the knowledge gleaned from drugs interactions and the results of multidisciplinary research teams will accelerate the advances in translational science from in vitro studies to clinical trials, providing safer and more effective benefits to society.

TITLE: THE PULMONARY FUNCTION TESTS

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The pulmonary function tests can detect respiratory diseases and offer a detailed assessment of pulmonary function.

There are various types of tests and each one evaluates a different aspect of the pulmonary function. They are also used to diagnose and / or follow the evolution of pulmonary diseases. They are held usually when the patient is or was a smoker, need to make more effort to breathe, feel more difficulty to make physical exercise, has expectoration without having a cold, has apnea or has persistent cough in the last months.

Generally, these tests can measure the air retention capacity, the inspiratory and expiratory capacity, the oxygen and the carbon exchange capacity. These include: the lung capacity which reflects the degree of rigidity or elasticity of the lungs and rib cage, evaluating restrictive disorders; the throughput rate that aims to evaluate the degree of stretching or airway obstruction evaluating obstructive disorders; the debit-volume test, useful for detecting changes that block of partially the larynx and trachea; the assessment of muscle strength; the measurement of diffusion capacity.

The most commonly used test is spirometry. This test measures the inspiratory and expiratory capacity of each breath, which includes: CO diffusion studies, study of resistance, determination of residual volume, proof of bronchoconstriction, bronchodilator test and determination of inspiratory and expiratory pressures. Spirometry is used to diagnose various diseases such as chronic obstructive pulmonary disease, asthma, cystic fibrosis and pulmonary fibrosis. The main advantages of these tests are its simplicity, easy understanding and interpretation.

TITLE: MECHANISMS OF ASTHMA

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Asthma is the inflammatory disease of the airways, characterized by the constrict of the trachea and bronchia, channels where the air passes, due to the growth of the bronchia reactivity, as a consequence of many stimuli that lead to inflammation. Some microorganisms, virus, bacteria or allergenic products in the organisms lead to edema or lungs constricted airways challenging the air passage, causing shortness of breath, chest pain and tightness, cough and wheezing.

Eczema, allergic rhinitis, asthma family history or atopic disease are frequently associated with this problem. The decrease of the caliber of the airways is reversible, spontaneously or with treatment.

Factors like allergies, infections, smoke, fast climacteric changes, stress might lead to organism responses, like chronical inflammation, occurring tissue damage, edema and mucus production; hyperactivity in which there is bronchia's and trachea contraction of smooth muscle and excessive sensibility, causing bronchia constriction; Bronchia constriction is caused by some airways cells, like the mastocytes that release histamine and leukotrienes, leading to smooth muscle constriction, increased mucus secretion and migration of some leukocytes; at last, reshuffle which is an chronical inflammatory process of the airways that worsens the bronchoconstriction and turns irreversible the structure alterations in the airways, damaging lungs function.

In order to reduce the airways inflammation, there are some measures that must be taken, such as avoid the stimuli contact and therapeutic administration of corticosteroids, mast cell stabilizers and bronchodilators.

TITLE: ERYTHROPOIETIN – PHYSIOLOGY AND PHYSIOPATHOLOGY OF ABUSE

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Erythropoietin (EPO) belongs to a large group of hematopoietic growth factors. These factors regulate the proliferation and differentiation of hematopoietic cells of the bone marrow which are the precursors of blood cells (red and white cells and platelets). Erythropoietin fits in the group of cytokines which are molecules that modulate the proliferation and maturation of hematopoietic cells.

Erythropoietin is a glycoprotein as well as the main factor that regulates the production of red blood cells (erythrocytes), a process known as erythropoiesis. EPO is mainly produced in the kidney and, in lesser extent, in the liver. This glycoprotein circulates freely in the blood. The stimulus for erythropoietin production is low oxygen pressure in renal tissues, which happens in cases like anaemia, arterial hypoxemia and insufficient renal blood flow.

Nowadays, athletes use this glycoprotein, improperly, for better results in their activities, because it rises and stimulates erythropoiesis by increasing the number of precursor cells that have receptors for erythropoietin and thus differentiate and proliferate. As a consequence, the amount of oxygen in the blood increases, which results in a larger flow of oxygen to the muscles, improving aerobic energy production, which improves the performance of individuals.

However, although it improves endurance performance, it also endangers the health of the individual, since by increasing the density of the blood, increases the risk of blood clotting which can block blood vessels causing heart attack, stroke or hypertension.

TITLE: AUTOIMMUNE DISEASES

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The immune system is essential for survival, verifying that a decrease in immune function may increase the susceptibility of infection. However, the immune system can itself cause certain type of diseases by inappropriately attacking cells, tissues and organs of the body, resulting in autoimmune diseases, in which there is the disappearance of immune tolerance and the subsequent attack by auto-antibodies and auto-reactive T cells on the “good” components of the body, resulting in inflammation and tissue destruction.

There are more than 100 registered autoimmune diseases, and a common aspect with most of these pathologies is its prevalence in women (especially in reproductive age). Usually, those diseases are divided into "organic specific autoimmune diseases " and "systemic autoimmune diseases." In the "organic specific autoimmune diseases ", the immune response is specifically directed against self-antigens of a specific organ (eg: type 1 Diabetes; Multiple Sclerosis). However, in "systemic autoimmune diseases" the immune response is directed against the self-antigens of an organic system, consequently this type of autoimmune diseases involves almost all the organs and systems, affecting the connective tissue, nervous system, muscles, endocrine system and gastrointestinal system (eg: Rheumatoid Arthritis; Systemic Lupus Erythematosus).

There are several treatments for autoimmune diseases, such as: correcting the "damages" caused, for example, replacement of hormones that aren’t being produced by a particular attacked organ (eg: insulin in the T1D); reduce the activity of the immune system, controlling the autoimmune disease while maintaining the ability to defend the body against attacks; reduction of symptoms with anti-inflammatory drugs.

TITLE: HEMOPHILIA

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Haemophilia is a hereditary disease transmitted through sexual X chromosome, affects mainly the male sex, because it's a recessive disease. However may appear due to a spontaneous mutation. It is characterized by the absence or a lower amount of coagulation factors. Normally, the blood contains thirteen coagulation factors that work together and are responsible for this process. When one of the thirteen coagulation factors doesn't work or reduce this work, the procedure is compromised and bleeding remains and the clot doesn't form. This is what happens in haemophiliac patients.

There are two types of haemophilia, type A and type B, the first is the most common, and is caused by a deficiency in factor VIII and the second is caused by the deficiency in factor IX.

The disease can be classified as severe, moderate or mild. The cases of mild and moderate haemophilia are diagnosed in adulthood, because minor injuries normally are healed, but they require more time to heal, because these people have small amounts of these coagulation factors. The patient only realises the disease when he has serious bleeding. In contrast, the cases of severe haemophilia become apparent at earlier ages during a single wound. The first symptom that appear is usually in the form of large hematomas when the child learns to walk or crawl.

Although, it is a very rare disorder, and currently this disease is treated by administrating anti-haemophilic factor, so the blood stream has sufficient amount of coagulation factors to prevent the bleeding.

TITLE: DIABETIC NEPHROPATHY AND DIALYSIS

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Diabetic nephropathy is the renal manifestation of diabetes mellitus and the leading cause of end-stage renal disease (ESRD).

The risk of progression of diabetic nephropathy has decreased over the last decades, mainly due to rigorous glycemic control, more effective reduction of blood pressure and the use of angiotensin converting enzyme inhibitors.

The risk factors associated with diabetic nephropathy include: family history of diabetes; black race; elevated blood pressure and evidence of hyperfiltration early in the course of disease; deficient glycemic control; smoking; obesity; advanced age and probably the use of oral contraceptives.

Diabetic kidney disease is a glomerulopathy defined by structural and functional changes. The predominant structural changes include mesangial expansion, glomerular basement membrane thickening and glomerular sclerosis. Functional changes include hyperfiltration, microalbuminuria, macroalbuminuria and progressive decline in glomerular filtration rate; this progressive decline in renal function in advanced stages leads to the need of performing dialysis.

Dialysis is the process of extraction of residual products and the excess of water in the body. There are two methods of dialysis: hemodialysis and peritoneal dialysis.

Hemodialysis relies on the principles of solute diffusion across a semipermeable membrane; movement of metabolic waste products takes place down a concentration gradient from the circulation into the dialysate.

In peritoneal dialysis a dextrose-containing solution is infused into the peritoneal cavity and toxic materials are removed through a combination of convective clearance generated through ultrafiltration and diffusive clearance down a concentration gradient.

Although there are differences in practice patterns, hemodialysis remains the most common therapeutic modality.

TITLE: CUSHING SYNDROME

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Cushing's syndrome is a disease caused by a high concentration of cortisol in the body.

Cortisol is a hormone produced by the adrenal glands. It helps the body control stress, reduces inflammation and contributes to the proper functioning of the immune system. It also keeps the sugar levels constant, as well as blood pressure. The levels of Cortisol are related to daily activity, so, they vary during the day. The basal cortisol levels in the blood are higher when you wake up and diminish throughout the day.

This hormone promotes lipolysis by increasing the activity of the enzymes responsible for this function. The storing of the released fat in specific locations, such as the neck, are a proof of the disease.

The two main reasons why cortisol levels may be abnormally high are: excess corticosteroid drugs or excessive production of the hormone by the body itself, which can occur due to a tumor in the glands, among other causes. This excessive production can lead, for example, to the burning of fats.

The signs and symptoms of Cushing's syndrome tend to vary from person to person, the most common are: fat deposits in the body, weight loss, fragile skin, as well as, slow healing and acne. Irregular or absent periods are a common occurrence in females and erectile dysfunction in males.

TITLE: DIABETIC FOOT

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The diabetic foot is one of the most common complications in diabetic patients, with the end result of a number of changes that diabetes causes the lower limbs.
This condition occurs by the destructive action of excess glucose in the blood, and a diabetes patient is a candidate to have neuropathy, associated with changes in blood circulation (micro and diabetic macroangiopathy), makes it more vulnerable to infections in the feet. These three factors: diabetic neuropathy, angiopathy and infection are the most frequent form of diabetic foot triad.
With the reduction of blood flow in lower limbs caused by an obstruction or narrowing of the vessels (diabetic angiopathy), and the loss or modification of superficial and deep sensation accompanied with a decrease in nerve conduction velocity (diabetic neuropathy), diabetic patients may suffer progressive wounds and had no pain and weaken certain muscles of the feet, further contributing to the deformity therein. These factors are prone to infection and, in more severe states, progress to gangrene due to poor tissue oxygenation and consequently decrease of defenses.
To avoid or decrease this condition, the therapist may play an important role in the prevention and treatment, helping the patient to perform exercises for strengthening the muscles of the foot and improve circulation, prevent edema, to prevent loss of functional capacity of the member.

TITLE: CYANOBACTERIAS

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Cyanobacteria are prokaryotic and photosynthetic organisms. May develop in abundance both fresh and brackish waters with high nutrient load. Cyanobacteria were also the primary producing major biosphere since gradually released oxygen into the atmosphere over more than 1,500 million years, continuing to play a key role in the lower trophic levels of the oceans acting as suppliers of nitrogen.

Our intention is to warn of the harmfulness of these organisms as well as transmitting information about ways to prevent / control the behavior to have in case we are faced with these organizations and how they reproduce. The methodology was based on the systemic review articles and other sources of information in order to achieve our goal.

In terms of results, we also noticed some factors which contribute to its development: increased nutrient loading as a result of human activities, climate change, high temperatures, nutrient-rich waters.

Also looked at the level of "liberation toxins" by the cyan bacteria that some species of cyan bacteria produce and release toxins into the water that can poison other animals that inhabit the same environment or contaminate drinking water, causing diseases to humans.

We can conclude, therefore, that despite being the big “founder” of our biosphere, cyan bacteria eventually also have a negative weight in terms of life existing in the same environment in which they are and can bring many consequences for their development.

TITLE: INCREASE IN DISEASES TRANSMITTED BY WATER CONSUMPTION

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Water is a resource essential for life, which means that all living organisms depend on it for their survival, but it is essential that water resources present the physical and chemical conditions suitable for use not only in adequate quantity, but also that their quality is satisfactory to meet the needs.

There are several types of diseases that may be caused by water. Lack of water can also cause disease, because its scarcity prevents proper hygiene. It is very important to know these diseases and how they affect people's health in order to prevent them or reduce their occurrence.

With this work we intend to evaluate the knowledge of diseases transmitted by water of the students of Coimbra Health School.

The methodology used for this study was a questionnaire of the subject and prepared by the authors.

The knowledge of students is satisfactory with regard to disease caused by water, with a percentage of 54% and 91% know the effects of cholera. In relation to the amount of people who die each year these are not informed / aware, with only 19% hit.

In conclusion, worldwide, per year, about 25 million people die from waterborne diseases, which is quite worrying value. This work serves to be able to raise awareness among students of the danger they are exposed to on a day-to-day.

TITLE: "NEW" MICROORGANISMS ASSOCIATED WITH WATER

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Water is the main vehicle of agents of gastrointestinal diseases, given that we can say that its quality is directly related to infant mortality indicators. This is in part the huge amount of microorganisms present in the water we consume.

It is true that most of these do not have any effect on human health, but there are others (pathogens) that when present can cause serious problems. Therefore, constant monitoring of levels of water quality is required.

The purpose of this job is to make known the "new" microorganisms associated with water and somehow aware populations in order to draw attention to the problems that affect water quality related to these microorganisms.

The methodology was based on the systematic review of scientific articles and other sources of information on the subject. Particularly in a Portuguese study on the presence of a range of unknown bacteria in the Mar dos Sargaços.

The results of this study revealed that homologous genes as those used to degrade the methanesulfonate (MSA) are present in these waters giving rise to a variety of unexpected microorganisms, it is not possible to have its characterization.

We conclude that we can see that the emergence of the "New" microorganisms associated water will alter the quality of this which can bring many problems to human health as gastrointestinal diseases. Thus warn populations to the subject studied and to be concerned to obtain information on the quality of water they consume / use in day-to-day.

TITLE: THE REUSE OF TREATED WASTEWATER AND THE IMPLICATIONS FOR PUBLIC HEALTH

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Water is our most precious asset and we need it for our survival on Earth, so we need to increasingly take measures to preserve it, namely its reuse. In this way, the risks associated with reuse depend on the concentration of pathogenic microorganisms, the concentration of chemicals and population exposure level, as well as the contact time with the same water.

With this work is intended to raise awareness of population for this issue, warning people to their advantages and disadvantages, also providing information about the progress that Portugal has had in this area.

The methodology used for this work was the revision of scientific articles and the application of a questionnaire to students of Escola Superior de Tecnologia da Saúde de Coimbra.

The findings of the questionnaire, students revealed that they have sufficient knowledge on the subject (45.8%). The reason for the reuse of waste water that responded most was the lack of water (67.8%). The vast majority of people responded that the reuse of water back benefits (98.3%) and that these benefits are environmental (89.8%). Students prove sufficient knowledge regarding the activities where we can apply the reuse of waste water (52.5%). Finally, revealed also have sufficient knowledge on the places where are forwarded and further processed, the waste water (45.8%).

We can conclude that the reuse of waste water, contributes to solve problems of lack of water, minimize contamination of the water and expand the economy.

TITLE: WATER-RELATED VECTOR-BORNE DISEASES

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In the last two decades, many pathogens associated with vectors have emerged in new regions, while many endemic diseases have increased their incidence.

These diseases are transmitted by the bite of mosquitoes or vectors that develop in water such as dengue, yellow fever, schistosomiasis, filariasis and malaria. According to the WHO, each year, more than 1 million people die from mosquito-borne diseases in the world. This work presents two case studies of dengue and yellow fever.

The objective of this work is to present some of water-related vector-borne diseases, focusing the presence of dengue in Madeira and yellow fever in Brazil.

This work was based on articles and studies on the subject under study.

In Madeira from 2012 to 2013, 182 cases were confirmed by laboratory, verifying predominance of males, mean of 9.6 years old. The incidence rate was 413.5 per 100 thousand habitants, with a peak incidence in November 2012. From 2000 to 2012, in Brazil were confirmed 326 cases of yellow fever, with an overall of 156 deaths and a case fatality rate of 47.8% mainly affecting the group of young male. The disease focus mainly in the months of December to April.

The optimization of health systems, education of professionals and the population and the implementation of contingency plans or emergency are essential at this stage, being the control of vectors primordial in countries with fewer resources.

TITLE: *LEGIONELLA*

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Legionella is a widely distributed bacterium that can survive in hostile environmental conditions for long periods of time, which contributes to their easy spreading and it shows a high probability of human exposure to this agent. For the importance that's in Public Health, it's fundamental research and quantification of Legionella in environmental samples, for better surveillance and prevention of this disease. This study aims to understand where and to whom the Legionella has a higher incidence rate, through the analysis of several scientific articles on this subject we can see that the Legionnaire's disease is a serious and sometimes fatal infection by Legionella. In 2012, 5856 cases were reported by 30 countries. Six of these countries accounted for 84% of all reported cases. Few cases have been reported by countries in Eastern Europe. The cases of Legionnaires' disease are reported mainly in people of older age groups, especially men, the distribution of cases by month of beginning showed a peak in the summer, with 57% of all cases that have a start date between June and October.This study we can conclude that Legionnaires' disease remains a major cause of potentially preventable morbidity and mortality in Europe. Clinical awareness and laboratory diagnosis are essential for the immediate treatment of disease.

TITLE: *PROJETO RIOS*

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The "Projeto Rios" is a project where you can learn to value the importance of water courses, by implementing a national network through observation, monitoring or surveillance, in order to preserve them, and given that it is a project started three years ago by our school, we decided to adopt it to give it continuity. Therefore, with the support of the NAQ (Environment and Quality Center) of ESTESC, we intend to implement some measures in order to raise awareness from the local population to preserve the section. In order to achieve our goal we will do a cleaning campaign where we anticipate support not only from our group as well as local workers (since it is an area next to which is held the "Feira dos 23", and as a consequence it produces a lot of waste). After its completion we will create a photography exhibition in which it will incorporate the necessary information about the local flora and fauna hoping to show to the general public that it is not difficult to change bad habits. and the help we get is mostly worth it. Therefore, we sought to extend information and consciousness to the general population, as well as the promotion of environmental education and public contribution, taking into account sustainable development, aimed to improve the quality of life of each individual, while preserving the environment in the short, medium and, especially long term.

TITLE: THE AVAILABILITY AND QUALITY OF THE WATER

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The water is a precious resource, essential to life. The human body is made of 70% of water and of it depends the majority of our bodily functions. The increased concern with the availability of water has demanded a new awareness in what concerns the use of this resource.

The potable water found in nature is essential to life in our planet. However, this richness has become increasingly scarce.

The methodology used in the study was the application of a questionnaire about the Consumption and Quality of Water, elaborated by the authors and posted on Google platform.

Our purpose was verifying the level of knowledge about the quality of water and its availability, from the students of several different departments of Polytechnic Institute of Coimbra.

We checked that 56% of the respondents prefer water from the faucet than the bottled one, justifying the phrase “The water from the faucet is of good quality and doesn’t cause any problems” (31.5%). About 27.9% has a habit of filling up plastic bottles with faucet water to carry on a daily bases. From the respondents, 46.8% considers that the water in Portugal is of good quality and 12.6% of very good quality. Dos inquiridos, 46.8% considera, a água em Portugal, de boa qualidade e 12,6% de muito boa qualidade. 97.3% consider water essential to life, however only 85.6% think drinkable water will run out.

We conclude that the quality of water for consumption is an indicator for the evaluation of the developmental level of a country and the well-being of the population. In Portugal, exists a specific legislation for the control of the parameters to provide the best quality of water.

TITLE: ANTIHISTAMINES

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Antihistamines are drugs which inhibit the action of histamine by blocking the binding to its receptor, or inhibiting the enzymatic activity of histidine decarboxylase.

Histamine is responsible for the inflammatory response. The mast cells produce large amounts of histamine and are mainly found in the nose, mouth and feet. When the immune system detects a foreign substance, the mast cells release histamine which binds to receptors of other cells by increasing the permeability of blood vessels in this area. In this way, the specialized cells that serve to defend the body, can access that area. This response triggers redness, swelling and itching. These symptoms occur due to an allergic reaction that arises from an increase in the histamine released by the mast cells.

Antihistamines are used to reduce these symptoms in order to block the reaction of the body to foreign substances (allergens).

Some antihistamines are of a broad scope to target histamine receptors with significant antimuscarinic action, causing few side effects such as drowsiness, sedation, dry mouth, blurred vision, and fluid retention.

Antihistamines are drugs 1st generation such as hydroxyzine and clemastine, which reduce the symptoms of allergies, as readily cross the blood-brain barrier and thereby cause sedation. The 2nd generation are drugs such as Cetirizine or Desloratadine, which are non-sedating because they have trouble crossing the afore-mentioned barrier.

Most people can take antihistamines safely. These should not be used by pregnant women, nor by patients suffering from kidney or liver problems, glaucoma and hypertension.

TITLE: BIOLOGY OF HIV-AIDS VIRUS. ANTI-RETROVIRAL.

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AIDS is a human immunologic system disease caused by a virus called human immunodeficiency virus or HIV. This virus is weak, so its mean of transmission is not quite direct. In contact with nature it is easily inactivated by physical and chemical agents like air or sodium hypochlorite and hydrogen peroxide respectively. Moreover, the virus needs to be in presence of human corporal fluids-blood, sperm and vaginal secretions-in order to survive.

The lastingness of this virus inside our organism is related with his connection to T lymphocytes, monocytes, macrophages and dendritic cells, places where there are CD4+ receptors. However, these cells don't suffer the cytopathic effect of the virus, serving it as a tank that allows its spreading through the organism, especially brain and lungs.

Currently, there is no knowledge of medicine capable of curing AIDS. There is only medication capable of barring certain steps in the life of the virus, blocking its replication and consequent infection of the new cells of the organism. This medication is called anti-retroviral. They split into 4 parts: Fusion Inhibitors – they block the permanence of the virus in the CD4 cells by sticking to proteins which stay outside the virus; Nucleoside Inhibitors of Reverse Transcriptase - they obstruct the virus from copying its own genes, creating defective versions of its nucleus; Non-Nucleoside Inhibitors of Reverse Transcriptase – they also affect the HIV replication process by sticking to the enzyme that controls the process, known as reverse transcriptase, and Protease Inhibitors that reach other enzyme involved in the virus encapsulation process, protease.

TITLE: RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEM/ ACE AND RECEPTORS AT1 INHIBITORS

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The Renin-Angiotensin-Aldosterone System (RAAS) is a classic endocrine system that helps to regulate long term blood pressure and extracellular volume in the body. The system begins with the release of angiotensinogen into circulation by the liver in the response to low blood pressure and adverse changes in sodium concentrations. The enzyme renin, released from the kidney, cleaves angiotensinogen to form the inactive decapeptide Angiotensin I (ANG I). Further transformations of Angiotensin are carried out by ACE (Angiotensin Converting Enzyme), which is predominantly found in the pulmonary circulation. ANG I gets converted to ANG II by the action of ACE. ACE also degrades Bradykinin which is required for synthesis of a major vasodilator (NO - nitric oxide). The interaction between ANG II and the AT1 receptors causes vasoconstriction, activates the sympathetic nervous system and lead to the release of the hormone aldosterone, increasing sodium retention and blood pressure. The pharmacological approach for the resolution of this problem is blocking the production of Angiotensin II by ACE inhibitors. When used in patients with previous heart attack, the arrhythmias and the incidence of reinfarction are reduced, as well as the development of heart failure. ANG II can be produced by alternative ways, non-dependent of ACE, like Chymase. This way, it's important that the RAAS may be selectively blocked by compounds that antagonize Angiotensin II receptors (AT1), called Angiotensin II Receptor Blockers (ARBs).

TITLE: SGLT2 INHIBITORS

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The SGLT2 (sodium-glucose linked transporter 2) is a membrane protein present on the renal proximal tubule, which function is to regulate the reabsorption of filtered glucose in the kidney.
The diabetes is a chronic disease, which results from a glucose metabolic dysfunction, characterized for the high blood concentration of this substance. When this one achieves, around, 180-200 mg/dl, the renal tubules exceed their reabsorption limits of this substance.
So, around 90% of glucose present in the interstitial renal fluid is reabsorbed by SGLT2 action and the remaining 10% are reabsorbed by SGLT1.
In order to control this disease, it resorts to the SGLT2 inhibitors which could be taken with other oral medicines, or could be used alone. Besides reducing the glucose concentration in the blood, they also reduce the arterial pressure, blood lipids and the weight, presenting an important role in the decrease or delay of complications associated to the diabetes.
Their effect focuses on the inhibition of a protein responsible for the simultaneous passage of the molecule of glucose and sodium ion into the cell.
Currently, several drugs belonging to the class of gliflozins are available in a therapeutic way, emphasis the dapagliflozin, canagliflozin and empagliflozin. The secondary effects are thirst, urinary infections and increase urination.

Keywords: SGLT 2 inhibitors, kidneys, diabetes and gliflozins

TITLE: HORMONAL FUNCTION OF THE GONADS: TESTOSTERONE VS PROGESTERONE

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In the men, the gonads are the testicles and in the women are the ovaries. In both, their organs have two functions: production of reproductive cells and endocrine secretion of sex hormones.
In the testicles, the testosterone (hormone secreted) is assured by a special group of cells – Leydig's cells. The testosterone is released in the bloodstream, being distributed all over the body. This hormone is going to involve multiple functions, like the development of the secondary sexual characteristics and the regulation of the spermatogenesis, being its production regulated by the hypothalamic-pituitary axis.
The production of the female gametes it happens in the ovaries. They release only one mature sexual cell in each 28-day cycle (median duration), although it presents, since birth, several thousand of ovarian follicles (structure formed by an immature oocyte and by the layers of involved and specific cells). The oocyte maturation is also regulated by the hypothalamus and the pituitary, and this also regulates endocrine ovarian function that at the time of ovulation, the estrogen hormone produced essentially, passing afterwards to produce the hormone progesterone in larger quantities. The female sex hormones not only interfere with the ovarian cycle, but also with the uterine cycle and the development of female secondary sex characteristics.
There are also two gonadotropins: FSH and LH. They regulate the activity of the testicles and the ovaries. In the women, FSH and LH participates in the menstrual cycle, while in the men, FSH stimulates the production of the spermatozoon and the LH acts on the testis, favoring the production of testosterone.

TITLE: CHOLESTEROL METABOLISM, STATINS, ALCOHOLIC AND NON-ALCOHOLIC FATTY LIVER DISEASE

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Cholesterol, known by its natural functions in our bodies, such as contribution to the structure of the cell walls, making up digestive bile acids in the intestine and allowing the body to produce Vitamin D.It is insoluble in the blood, reason why it needs to be transported around the body by LDL and HDL lipoproteins. It's released from the gallbladder, where it is oxidized into bile acids to improve digestion and absorption of fats found in the diet. It has been related to cellular signaling processes and it is also important to the correct function of serotonin receptors. In case of finding high levels of cholesterol in the blood, statins are often prescribed to help preventing atherosclerosis and strokes. The statins are block of enzyme known as hydroxy-methyl-glutaryl (HMG)-CoA reductase and also inhibitors. This enzyme plays a key role in cholesterol production. The liver is central in the regulation of the cholesterol levels in the body. Not only it does the synthesis to export to other cells, but it also removes cholesterol from the body. As a result of the accumulation of triglycerides and other fats in the liver cells, the fatty liver disease can be found in different forms, such as: alcoholic and non-alcoholic. The first one, caused by alcohol is a result of excessive alcohol consumption. The last one results from the accumulation of fat in liver cells of people that don't drink too much alcohol and is associated with obesity and hypertension.

TITLE: DPP-4 INHIBITORS

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The incretins are a class of substances produced by the pancreas or by the intestines and regulate glucose metabolism. These include: insulin, glucagon, amylin, GLP-1 (glucagon-like peptide-1) and GIP (glucose-dependent insulinotropic popypeptide).

The differentiated insulin secretion in response to various substances ingested or administered orally led to the concept of the incretin effect. Subsequent studies have identified important incretins GLP-1 and GIP, produced by intestinal endocrine cells in response to a ingestion of aliments.

The DPP-4 inhibitors (gliptins) and analogs of glucagon-like peptide (GLP-1) relase insuline through the gastrointestinal hormones, incretins, produced after ingestion of food. The gliptins prolong GLP-1 activity by inhibiting DPP-4, the enzyme responsible for its metabolism. Most of the plasma enzyme DPP-4 inhibitors, such as sitagliptin and vildagliptin, inactivate the enzyme in a reversible manner. For this reason, the endogenous GLP-1, produced post prandially, remains active for longer. The incretin deficiency in type 2 diabetes is offset by incretin mimetics or analogs / derivatives of GLP-1 and DPP-4 inhibitors which act as antihyperglycaemic not causing hypoglycemia and probably contribute to the regeneration of beta cells of the pancreas. It is a method practically physiological that can regulate the metabolic situation.

TITLE: ORAL ANTIDIABETICS

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Diabetes Mellitus is a disease which appears when the pancreas does not produce enough insulin or when ir can't use produced insulin. This is a hormone who allows our muscles and other tissues to remove glucose from the blood in order to be used or stored.
People in Diabetes situation can't use glucose from foods, leading to hyperglycemia.
There are several treatments to this disease, who change according to diabetes type or insucess of another mesures to control this problem.
Between many treatments, se can find oral antidiabetics, drugs used to help diabetic type 2 patients in the control of glycemia: sulfonylureas, glimides, biguanides, glitazones, amongst others.
This drugs are divided in groups according to their function in the organism:

- Sulfonylureas act mainly in the plasma membrane receptors of the beta cells of the pancreas, in potassium chanels, causing despolarization and entrance of ionized calcium; increasing this way the insulin secretion.
- Glimides increase the pancreatic insulin secretion. They act in the early fase of that secretion, blocking k+ active chanel and causing despolarization, leading to insulin secretion.
- Biguanides reduce insulin periferic resistance, decreasing glucose hepatic production.
- Glitazones increase insulin periferic resistance throught glucose stimulous captation by the skeletal muscle.

TITLE: VITAMIN K AND COAGULATION

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Introduction: Vitamins are organic substances present in small amounts in diet. There are several groups of vitamins. One example is vitamin K, a lipophilic and hydrophobic vitamin, which may arise as phylloquinone, dihidrofiloquinona, menaquinone and menadinona. It's main sources are vegetables such as watercress and broccoli, and oils such as olive oil. The vitamin K absorption occurs in the small intestine and its transport is made by the lymphatic system, thereby it´s necessary to have a bile and pancreatic juice at normal levels for its correct absorption. This vitamin participates in the regulation of three physiologic mechanisms: blood coagulation, bone metabolism and vascular biology.

Vitamin K and Coagulation: Coagulation is a complex mechanism of natural protection against hemorrhage associated with vascular damage. This mechanism occurs in a cascade of events that culminates in the formation of a clot. One of this events is the conversion of fibrinogen to insoluble fibrin, which occurs with the interference of a proteolytic enzyme – the thrombin. Thrombin arises from prothrombin by the vitamin K dependent factors.

Conclusion: Factors that interfere with vitamin K, interfere indirectly with the clotting mechanism. There are drugs that antagonize Vitamin K. These Vitamin K antagonists, such as warfarin, have a hipocoagulant effect and are used for prevention of thromboembolic events such as heart attacks and strokes. These drugs increase the risk of bleeding and a diet with foods rich in Vitamin K can interfere with the action of these drugs.

Key-words: Vitamin K; Coagulation; Vitamin K antagonists

TITLE: THYROID DISEASES

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The thyroid is one of the largest endocrine glands, weights approximately 20 grams and is located in the central and lower part of the neck.
It is composed by two lobes linked by a narrow bridge of the thyroid tissue.
On the one hand, hypothyrodism is the lack of thyroid hormones which can cause decreased metabolic activity, low body temperature, cold intolerance, among others. The most common way of hypothiroidism is Hashimoto's disease that might cause a low level of hormones.
On the other hand, hyperthiroidism results from an increased level of thyroid hormones in which an increased metabolic activity might cause a high body temperature and heat intolerance. The most well known cause is Graves' disease that causes inflammation in thyroid.
The thyroiditis might be associated with hypothyroidism as well as hyperthiroidism.
The nodules and thyroid cancer as well as goiter are three other disorders related to thyroid.
Thyroid nodules are small tumores that can be solid or contain a liquid substance that may be cancerous.
The thyroid cancer is uncommon, but there are four types: papillary, follicular, medullary and anaplasic. Goiter is visible increase in thyroid, it used to be more often due to iodine deficiency, but today our diet contains salt, so goiter is not as frequent as it was.

TITLE: HORMONAL FUNCTION OF THE ADIPOSE TISSUE – ADIPOCYTOKINES

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Adipocytokines are soluble mediators derived mainly from adipocytes, fat cells from the adipose tissue. These bioactive proteins influence inflammation, insulin resistance, diabetes, atherosclerosis and several other pathologic states besides the regulation of body weight. Some of these proteins are adiponectin, resistin, visfatin, retinol binding protein-4 (RBP-4) and leptin.

Adiponectin, which has a serum level inversely correlated with fatness, is a potential biomarker for metabolic syndrome and has several anti-inflammatory actions, increasing insulin sensitivity and ameliorating obesity. Resistin derived its name due to its involvement in the development of insulin resistance and, in 2007, was reported to have protective effect in ischemia-reperfusion injury and myocyte-apoptosis in the setting of myocardial infarction. Visfatin has been described as an inflammatory cytokine. An increase in the expression of visfatin mRNA has been observed in inflammatory conditions like atherosclerosis and inflammatory bowel disease. RBP-4 is involved in the developmental pathology of obesity and type 2 diabetes mellitus. Leptin mainly regulates the food intake, energy homeostasis and interferes with several neuroendocrine and immune functions. Its resistance has been associated with development of obesity and insulin resistance.

Few drugs and some lifestyle modifications have been found to improve the levels of adipocytokines.

TITLE: BROWN ADIPOSE TISSUE

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The adipose organ is a complex endocrine system, composed of white and brown fat. White adipose tissue (WAT) serves as the primary site of energy storage, storing triglycerides within individual adipocytes, whereas brown adipose tissue (BAT) stores little fat, burning it instead to produce heat and regulate body temperature.

As compared with white tissue, brown tissue is highly vascularized and innervated by the sympathetic nervous system. Moreover, white adipocytes are spherical and unilocular, whereas the brown adipocyte is usually smaller and characterized by multilocular lipid droplets and an abundance of mitochondria expressing uncoupling protein-1 (UCP1), which gives the cell's mitochondria an ability to uncouple oxidative phosphorylation and utilize substrates to generate heat rather than ATP. Exposure to cold leads to sympathetic stimulation of brown adipocyte via norepinephrine binding to beta- adrenergic receptors. This process is part of what is called non-shivering thermogenesis.

The main areas of progress in BAT research during the last decade have been the general acceptance that this tissue is present in humans of all ages and the recognition that BAT may not only dissipate energy in the form of heat but may also be a key determinant of weight and musculoskeletal development during childhood. Although much more work is needed, it is tempting to think that our challenge for the next decade lies in delineating the molecular regulation of BAT in humans and defining the implications that BAT has for early human growth, since it provides the potential for the development of novel anti-obesity treatments.

TITLE: INSULIN RESISTANCE MECHANISMS

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Insulin is a hormone produced in the β cells of the pancreas, which allows the entrance of glucose into the cells of the muscle, liver and fat tissue, where it's transformed into energy or stored. When it doesn't happen, glucose accumulates in the bloodstream and causes hyperglycemia.

The insulin resistance is a pathological state by a deficient response of target cells to normal level of circulating insulin, i.e. a decrease in insulin sensitivity. This concept includes all of the biologic action of the insulin: growth and development, glucose, lipid and protein metabolism, endothelial function and gene expression. The molecular processes that induce resistance are several and there are uncertainties, but recent studies showed an environmental and genetic basis, in particular through free fatty acids action. These fatty acids play a part in inflammatory reactions inducing insulin resistance.

There is a method called HOMA (homeostatic model assessment) that quantifies the insulin resistance and the function of pancreatic β cells. The insulin resistance, temporarily or permanently, is a pathophysiological change, associated to morbidities as obesity, type 2 diabetes, arterial hypertension and dyslipidemia, components of metabolic syndrome.

Therefore, with the insulin resistance impact on health and disease, its biochemical bases and ways of its assessment, allows us to understand and implement a set of preventive and therapeutic measures, that privileges and fight this pathophysiological change of these patients.

TITLE: AGE'S (ADVANCED GLYCATION END-PRODUCTS) IN THE FEED. GLYCEMIC INDEX

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Diabetes is a disease known for the incapacity that our organism has to produce insulin or using it in the right way and it is also known for the presence of high blood glucose concentrations, because insulin is "the key that opens the door where glucose enters in cells". If there's a shortage of insulin, the glucose keeps in the blood flow instead of providing the energy that cells need.

There are a lot of complications associated to this disease, in which we don't have means to avoid or retard them, even when our blood sugar levels are controlled.

The glycemic index indicates us the speed that the sugar present in food reaches the blood flow. This concept is important to help controlling the blood glucose, especially in diabetes.

Several chemical reactions occur in our organism between the sugars and the fats/proteins that create the AGE's. This way, high blood sugar levels cause an increase of the AGE's that are formed.

One of the effects of the hyperglycemia in blood is the formation of AGE's. These keep accumulating over time and increase with diabetes because there is more glucose and that's why the AGE's and the glycemic index are strongly related.

The AGE's have many pathological effects associated with their ability to change the chemical and functional properties of different biological structures.

In conclusion, the diet is the main exogenous source of the AGE's. These also contribute to increased oxidative stress and can have an influence in the development of various diseases, such as diabetes.

TITLE: INCRETINS

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Incretin hormones are produced in the gastrointestinal tract in response to food ingestion and act in the beta cells of the islets of Langerhans, which increase the secretion and release of insulin and decrease glucagon secretion.The "incretin effect" is characterized by the increment of insulin release from the pancreas when the stimulus is gastrointestinal glucose. This phenomenon is responsible for 75% of postprandial insulin secretion, and it's verified a reduction of this one in patients with diabetes *mellitus* type 2.

Among various existing hormones, major incretins are GLP-1 and GIP. The first one is secreted in L cells, which are mainly in the ileum and in the colon, after the consumption of nutrients. The second one is secreted from the K cells that are located in the duodenum and on the proximal part of small intestine.

The incretin hormones only stimulate insulin secretion in hyperglycemic conditions. Other important physiological actions of GLP-1 and GIP incretins are the inhibition of glucagon secretion, gastric emptying, decreased food consumption and increased number of β cells; inhibition of gastric secretion and regulation of lipid metabolism in adipose tissue level, respectively.

They also act as neurotransmitters in the hypothalamus level, to promote satiety sensation and also stimulate the growth and survival of β cells by inhibiting apoptosis, which involves the increasing of their mass.

Keywords: Incretins, Mellitus diabetes type 2, GLP-1, GIP.

Keywords: Incretins, type 2 diabetes, GLP-1, GIP.

TITLE: SATIETY MECHANISMS

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The satiety mechanisms are directly linked to the feeding behavior of the people. The regulation of food intake and energy storage will result in feelings like hunger, appetite or satiety. Such feelings can depend on social and cultural conditions as well as food availability. Also the circadian rhythm or physiological signals of an individual may reflect neuronal, intestinal, endocrinal and adipose factors, which act and interact with each other in order to obtain energy homeostasis.

The element of the central nervous system responsible for controlling the homeostasis is the hypothalamus. By promoting connection between the nervous and the endocrine systems it regulates metabolic processes and controls the body temperature as well as the hunger, thirst and circadian rhythms. Four of their nuclei are involved in the satiety mechanism: the lateral nucleus, the ventromedial nucleus, the paraventricular nucleus and the arcuate nucleus; as well as two big groups of neuropeptides: the orexigenic (AgRP, MCH, NPY and Orexin) and the anorectics (CART and MSH).

This regulation can be made for either short or long term, depending essentially on the composition and quantity of food intake, correlated with the feeling of pleasure that instills power in humans and that makes driving neural mechanisms of reward, through the dopaminergic systems and serotonergic.

Studies in the field escalated as a response to the increase of obesity cases. As result, new substances were discovered and their interrelationships explored. Eventually, action points were designed for weight regulation and appetite control. Amongst these substances we can highlight the Ghrelin, Leptin, Insulin, Cholecystokinin (CCK), Secretin, PYY36, GLP1, GLP2 or the most recent Oxyntomodulin (OXM).

Keywords: anorexia, obesity, appetite regulation, hunger, satiety, energetic control, peptidergic pathways, regulation of the food intake, Hypothalamus, Dopamine, Ghrelin, Insulin, Leptin, Secretin, Serotonin.

TITLE: BARIATRIC SURGERY

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Abstract

Grade III obesity is a chronic disease of multifactorial ethology, which causes serious damage to the health of the individual. Due to its severity and difficult clinical management, new treatment strategies have been proposed, among which stands out bariatric or obesity surgery. Obesity surgery can be divided into surgical procedures that limit the gastric capacity (so-called restrictive surgery), those which interfere with digestion (poorly-absorptive procedures), and a combination of both techniques.

The procedure can reduce the initial weight in a year from the surgery. The intervention of the stomach reduces by about 20 cm3, what means that stomach loses 90% of its capacity. This reduction decreases the stomach's ability to withstand the usual amount of feed. Thus, the stomach fills up quickly, transmitting satiety message to the brain making the person eat less food.

The absorptive surgery is another technique that provides a lower absorption of food, leading to a more significant weight loss.

Candidates for this surgery include patients with a BMI > 40 kg/m2 or >35 kg/m2 associated with other diseases such as hypertension, dyslipidemia, type 2 diabetes, sleep apnea, among others.

The objective of this surgery includes weight loss, improvement of related diseases, such as cardio-respiratory parameters (chest pain, dyspnea, sleep apnea and hypertension) and metabolic (diabetes and lipid disorders), and ultimately the quality of life.

TITLE: BENCHMARKS OF QUALITY AND FOOD SAFETY

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Today, it is crucial to meet food quality and safety in food businesses, due to easy access of food from anywhere in the world. As such, it is necessary to implement the HACCP system and quality standards and food security, as these are prevention systems.

This study aims to feature some of the most important benchmarks of quality, food safety, referring to the advantages and disadvantages, their importance in the food chain and address the case study of INSULAC (Milk Products Açorianos SA).

The methodology used for this work was the literature review of several articles related to the topic and the company under study.

For results, runs one of the quality benchmarks and food security, so that they are guaranteed the minimum safety and quality of products, such as in the case of INSULAC company, governed by the ISO 22000 certification, as that is the most representative. Within existing standards, in Portugal the standard that prevails is ISO 22000.

In conclusion, ISO 22000, has a broader scope and can be applied to any type of activity related to the food chain, from production to logistics (transport and storage) or manufacturing of packaging, or even the restoration of sectors. Therefore the references of food quality and safety improve the food and all production processes, storage, among others.

TITLE: HACCP SYSTEM IN A SCHOOL CANTEEN

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Hazard Analysis and Critical Control Points (HACCP) is a system that aims a precautionary approach in order to avoid potential hazards that could harm consumers by eliminating or reducing the risks to ensure they are not available to consumer - unsafe food.

Obviously there are many dangers for Food Quality and Safety, which can be generated immediately after the receipt of raw material and thus affect all phases of the process.

This work aimed to evaluate the control system and HACCP food safety system through a cut, as well as identify hazards and propose solutions to minimize the risks of meat products marketed by school canteen.

For the preparation of the work a literature review of articles relating to this type of establishment HACCP was used.

We found that the use of watches, bracelets and rings are still very common, and that the hygiene of the nails and hands is not done correctly and the utensils used in the preparation of sandwiches and cakes. Most handlers do not use cap regularly.

It is concluded that the implementation of HACCP is a very complex task and requires the involvement of all employees and members of the HACCP team. Therefore, it becomes crucial to apply proactive security food systems, such as the HACCP system in order to restore the confidence of consumers and ensuring high standards of health protection.

TITLE: IMPORTANCE OF CONTROLLING TEMPERATURES ON FOOD SAFETY

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Since the production process of the product, it's storage until the distribution time of foodstuffs exists the possibility of contamination by microorganisms. Such cases arise when favorable conditions are created for the proliferation such as the preparation or storage temperatures are inadequate.

The measurement of the food temperature is a quality control and a food security tool because since the exposure of the these to the danger zone, which is between 5°C and 65°C, is favorable the survival and/or proliferation of microorganisms.

The objective of this work is to see if the temperatures of ready meals for consumption in public dinners are in accordance of which for its realization we resort to a literature review. Through the various articles we realized that measurements of the temperatures of food were performed at the beginning and end of the meal distribution. Then verified that the results presented indicate that in some of the food temperatures were below normal.

In conclusion, the temperature control in food is extremely important to avoid contamination and/or growth of microorganisms that can cause problems for human health.

TITLE: THE IMPORTANCE OF THE OF FOOD STORAGE CONDITIONS

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The control of food quality refers to any action related to food manipulation and hygiene that propose is to avoid food contamination, kipping the food innocuacy intact. The surveillance of the food quality in all of the production steps, since the planting to the consumption of the food, is a very important part of the process. For this surveillance, there are many referential systems of food safety and quality implementation, one example is HACCP (Hazard Analysis Critical Control Points).

To a better understanding the importance of the conditions of food storage, it was done a bibliographic revision in various scientific articles and food safety referentials.

With the realization of this work, it would be observed that the majority of the difficulties in food storage are related with the temperature in which the food is kept (cold cameras problems). Another major difficulty is associated to the structural and organizational components (problems related to the position and types of food that are storage next to which other and also the inadequacy of the recipients that contents them).

In conclusion, it could be seen by the articles revision the importance of a good practice in food storage and the influence that these procedures have on food safety.

TITLE: ENVIRONMENTAL CHANGE - AN INCONVENIENT TRUTH

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In recent years, have felt some climate change, and sometimes devastating and causing damage to the planet and humanity. Global warming is one of those phenomenon, by increasing the average surface temperature has to bring several consequences for the whole ecosystem.

Much of the scientific community believes that the increased concentration of anthropogenic pollutants in the atmosphere is the main cause of the greenhouse effect, thus global warming.

We intend therefore to the realization from work, make an approach to some of these problems as the case of the greenhouse effect, the melting of the ice caps, the Ascent of Medium Level of Seawater, the Habitat Destruction, etc and find out which the causes and what causes these climate change, as well as possible ways to combat these changes.

We aim also discuss the various views and interests of global warming stating important information on the subject based on scientific results.

For this work we use as a source of information some scientific articles published, scientific websites and the documentary viewing "An Inconvenient Truth" 2006 directed by Davis Guggenheim about the campaign of former Vice-President of the United States of America, Al Gore, with the intuited to educate the citizens of the world about global warming.

After evaluating the problems under study, we intend to demonstrate to the school community how problematic is the subject, and what we can do to minimize it.

TITLE: INDOOR AIR QUALITY – PROACTIVE ATTITUDE TOWARDS THE PREVENTION OF EFFECTS ON HUMAN HEALTH

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Concerns related to the effects of air quality on public health are generally regarded to air pollution outside buildings. Nevertheless, in today's societies people spend most of their time indoors: in their homes, at work, in commercial and leisure areas inside buildings, among others.

In these interior spaces, the sources associated with construction materials, flooring and furniture, the use of cleaning products, human occupation and the poor ventilation and air exchange are some of the contributors to the increased number of pollutants and their concentration in indoor air.

The prevention of indoor air quality problems (IAQ) is to be achieved through the use of rules of good practice related to ventilation and hygiene of the spaces and the correct implementation of maintenance plans for buildings, such as: changes in habits of the occupants, replacement of some materials used in decoration or products used for cleaning, or an adjustment of ventilation rates of the interior spaces.

Key-words: air pollution, indoor air quality, thermal comfort.

TITLE: GREENHOUSE EFFECT – Prevention is the best option

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The Greenhouse effect is a natural phenomenon that regulates the temperature on earth.
Sun rays are emitted to earth some are absorbed, which helps in the maintenance of the temperature and others are reflected to space in the form of red radiation.
For this effect to take place it's necessary gases with the Greenhouse effect, like carbon dioxide, chlorofluorocarbons, methane, nitrous oxide and ozone, that are found on the planet's surface.
The increasing of pollution, derived from the burning of fossil fuels, the increasing in industrial production, and the accumulation of gases, resulting in the Greenhouse effect, prevent the radiation from being reflected to space, and the consequent raise of the planet's temperature, which causes the melting of the ice caps, weather changes, increase of the oceans water levels and the occurrence of natural disasters.
With this work, we hope to give a bigger emphasis to this topic that is already so common in our everyday life. We wish that the population continues to look at this problem with concern, because it could cost the life of many people.
Our country is very alerted to this problem, because there are already many new projects that in short and long term could contribute to the recoil of Greenhouse effect.
This essay will be our way to alert people once again about the effects of this problem, and that if we take measures today we can make a better planet tomorrow.

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TITLE: AIR POLUTION - EPIDEMIOLOGY OF HUMAN EXPOSURE

AUTHORS: Ana Catarina Bordalo, Ana Luísa Santos, Ariana Nunes, Filipa Ferreira, Tatiana Neves

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Outstanding to urbanization process and the growth of cities, air pollution is currently one of the most themes approached in a global level. The clinical repercussions resulting of exposure to the major air pollutants are varied and tend to reach large populations, taking then effects on health which have been studied in more detail in recent years. As such, what we pretend with this work is, through the analysis of many scientific articles about this theme, evaluate the health effects associated with air pollution. But to evaluate these same effects we have to deal with the epidemiological indicators of environmental health, namely, the measures that summarize the relationship between health and the environment about air quality. In the end of this work we pretend to conduct a brief discussion about the main types of epidemiological studies used to examine the association between exposure to air pollution and health effects as well the advantages and disadvantages of the different types of epidemiological studies used.

Keyword: air pollution; epidemiological studies; health effects; Environmental health indicators.

TITLE: BURNED OF SUGAR CANE: EVALUATION OF THE EFFECTS IN AR QUALITY AND CHILDREN'S RESPIRATORY HEALTH

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The production of Brazilian sugar cane has been increasing over the past few years, with the main purpose of obtain ethanol. Of energy sources used in Brazil, cane sugar became the second energy source, thus overcoming the hydraulic energy, just behind oil.
The increased production carries with it a problem that passes by burning the leaves of cane sugar. In Brazil, sugar cane burning matches the period of low rainfall and poor gas dispersion. The purpose of this work goes to make known the situation that is happening in Brazil, in terms of this issue and somehow aware populations to the problems that affect air quality and potential health effects to the children or even the rest of the population.
The methodology was based on review of scientific articles and other sources of information on the subject. Focusing mainly on a case study in the Espírito Santo do Turvo (Brazil), where was analysed the air pollution caused by burning of cane sugar and respiratory health of children.
In short, pollution from agro industries processes in use in the city of Espírito Santo do Turvo, is a risk factor even when below the air quality standards. Therefore, there is the need to develop further studies to evaluate these effects, especially at this time, where we witnessed a great expansion of sugar cane crops in this country.

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TITLE: LABORATORY STUDY of COLD AUTOIMUNE ANEMIA

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Autoimmune Hemolytic Anemia (AIHA) is a clinical condition in which auto-antibodies bind to antigens present in the erythrocyte membranes, strating the destruction of red blood cells through the activation of the complement system, induced by a self-IgG antibody that binds at low temperatures and with the reticuloendothelial system.

The AIHA at cold temperatures can be described by the linking between antibodies (usually IgG) and erythrocytes at a low temperatures between 4-18ºC.

The diagnosis of this clinical condition is based on the clinical or laboratory evidence of hemolytic anemia and in the detection of auto-antibodies, especially IgG, with the Donath-Landsteiner test.

The Donath-Landsteiner test is used in the direct observation of presence or absence of hemolysis.

This method consists of placing two tubes with blood at different temperatures, one at 4ºC (test tube) and another at 37ºC (control tube), in order to check the connection between the self-IgG antibody and the red blood cell membrane and subsequent identification of the presence or absence of hemolysis. The presence of hemolysis indicates the presence of self-IgG antibody in the blood and the absence of hemolysis indicates the absence of the self-IgG antibody in the blood.

TITLE: LABORATORY STUDY OF THE RH-SYSTEM AND FETUS DNA RESEARCH

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The Rh blood group system was identified in 1939, is the most immunological system of the blood groups, after of the AB0-system, which is the most important in clinical terms, expressing itself in erythrocyte membranes. Genotypically, we can observer the Rh-system, once the Rh comes from one pair of allele in which the gene who encodes is dominant. Beyond the D antigen, it was discovered other four antigens in this system: C, c, E and e.

The chromosomal location of the genes can be defined by 1p36-34. The people with RhD positive have *RHD* and *RHCE* genes, while the people with RHD negative just have the *RHCE* gene. The majority of the persons RhD negative, have the gene *RHD* deleted, so there is no d allele. The gene RHD encodes the polypeptide D, and the gene *RHCE* encode the polypeptides C/c and E/e.

There are no natural antibodies detectable in persons with Rh positive or negative, just having the producing of the anti-D antibody, from a person which is Rh negative by one previous immunization with erythrocytes Rh positive.

The determination of the fetal RhD blood type is useful and powerful tool for prenatal care of pregnant women with RhD negative, avoiding unnecessary invasive procedures in cases of fetus being RhD negative. The molecular analysis of the maternal plasma in real time by Polimerase Chain Reaction, have open new possibilities for prenatal diagnosis noninvasive, where the embryo RHD genotyping is one of the most important clinical application until now.

Coimbra Health School published a research work under this topic with the title: Fetal RHD and RHCE Genotyping in Plasma of Rh Negative Pregnant Women at the International Journal of Biomedical Laboratory Sciences in 2012.

Free for download at: http://www.ijbls.org/upfile/Issues/201287114918.pdf

TITLE: LABORATORY TECHNIQUES OF ANTIBODY IDENTIFICATION

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Irregular antibodies are those that, whether natural or immune, its occurrence is unexpected. Laboratory techniques of antibody identification are performed after an irregular antibody screening (IAS) is positive.

It is recommended to use several mediums and temperatures, being necessarily included the one in which the IAS was reactive. ´

The cell suspensions to be used should be group 0 donor, with known phenotype acquired in commercial panels.

In order to identify the specificity of an anti-erythrocyte antibody with an acceptable degree of possibility, it must, at least, occur reactivity with two positive suspensions for the correspondent antigen and lack of reactivity with the other two negative suspensions for the antigen.

Mandatory to include an auto-control (serum problem with autologous cells that help determine if this is an alloantibody, an autoantibody or both) in all identification studies.

The antibody identification it's only complete after the patient or donor erythrocyte phenotyping of antigen to the corresponding identified antibody is performed and the result should be negative.

If the test is positive, that is, if the patient/donor possesses in their own erythrocytes the antigen corresponding to the identified antibody, it's most likely an autoantibody, as long as the patient has not been transfused within 90 days prior to study.

If the test is negative, that is, if the patient/donor do not has in their erythrocytes the antigen for the corresponding identified antibody, it's probably an alloantibody.

It is essential to use controls in phenotyping: One negative control lacking the antigen in question and a positive control with the antigen in question, in heterozygosity if possible.

TITLE: PAI: IRREGULAR ANTIBODIES SCREENING

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The Irregular Antibody Screening (IAS) consists in detecting antibodies which are not of natural occurrence (irregular) present in blood serum against the various known blood groups systems, both the donor and the patient, allowing the diagnose of allo-immunized individuals.
The individual becomes allo-immune when there is exposure to "non-self" antigen.
The most clinically relevant antibodies are those that react against red cell antigens and should essentially be aware of Rh, Kell, Duffy, Kidd, Lewis, MNSs systems. The erytrocitary suspensions from the blood group 0 are used since they do not react with the AB0 system that is discarded to irregular antibodies search.
Donors with a clinical history of pregnancy and/or previous transfusions do irregular antibodies search to detect possible allo-immunization.
The IAS is used in the following situations of: pregnancy (prenatal test - detection Ahrn), drug abuse, transfusion and transplantation (pre-transfusion testing and study of hemolytic transfusion reactions) and laboratory screening of blood donors.
To perform this technique is used human Anti Human Globulin (AHG) that will allow the reduction of the zeta potential which promotes agglutination of red blood cells; therefore our sample has serum antibodies against antigens present in red blood cells (positive), the AHG, as mentioned above, will allow the visualization of agglutination.
If the screening of irregular antibodies is positive, it should proceed with laboratory investigations namely the identification of irregular antibodies.

TITLE: LABORATORY STUDY OF THE AB0 / SECRETORY AND LEWIS SYSTEM

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The AB0 system was discovered when Karl Landsteiner recorded the agglutination of human red cells by the sera of other individuals in 1900 and, in the following year, detailed the serum reactivity paterns according to the AB0 blood type, now identified as blood groups A, B, and 0.
Phenotyping of AB0 system is composed by globular or direct evidence and by serum or reverse proof and can be performed in tube, microplate agglutination column or other sensitivity methods with similar specificity, also by molecular biology techniques.
The Lewis system is characterized by the expression of two antigens Lewis (Le^a) and b Lewis (Le^b) , the synthesis of which results from the interaction between the genes or secretory *FUT3* gene (19p13.3) and *FUT2* (19q13.3).
The expression of ABH and Lewis blood groups was determined in samples of blood and saliva. In testing for Lewis substances in saliva or on red cells, it has been found that red cell reactions may vary even in the same individual. The reaction of the Lewis system antigens in the red blood cells is dependent to some extent on the subject´s age and the techniques employed. Tests on saliva, however, are usually more reliable, since they yield fairly consistent results. (was originally described in 1946 by Mourant).
To do a laboratory study of the AB0/secretory and Lewis a systems is necessary a negative control and a positive control to validate the tests carried out.

TITLE: LABORATORY STUDY OF HEMOLYTIC DISEASE OF THE FETUS AND NEWBORN

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Hemolytic disease of fetus and newborn (HDFN) has, for a long time, been a main cause of perinatal morbidity and mortality. It was firstly described in 1609 by a French midwife but recognized in 1939 by Levine and Stetson.

HDFN is characterized by the presence of IgG antibodies in maternal circulation, directed against a paternally derived antigen present in fetal/neonatal red blood cells (RBC) that cause hemolysis in the fetus by crossing the placenta and sensitizing red cells for destruction by the macrophages in fetal spleen.

The diagnostic approaches for HDFN are maternal antibody determination, *in vitro* tests, fetal blood typing trough genetics, amniocentesis to monitor the severity of HDFN, fetal blood sampling, ultrasound.

The serological tests for HDFN diagnosis include a positive direct Coombs' test (DCT) on the baby's red blood cells and the presence of an IgG red cell alloantibody in both cord blood eluate and maternal sera. The presence of the corresponding antigen in cord cells confirms the diagnosis of HDFN.

Although the Rh (D, C, c, E, e and G) antibody was and still is the most common cause of severe HDFN, other alloantibodies than anti-D emerged as an important cause of severe HDFN such Kell (K and k), Duffy (Fy^a), Kidd (Jk^a and Jk^b), MNSs (M, N, S, s and U).

Screening for RBC alloantibodies in all pregnant women has been implemented in most developed countries, to detect possible HDFN and it prevention and treatment has been a remarkable success story in modern obstetrics.

TITLE: LABORATORY STUDY FOR COMPATIBILITY TESTS

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The compatibility test it's a method used in order to ensure the acceptable survival for the transfused red blood cells and provide security to the receptor, minimizing the adverse reactions to transfusion due to irregular antibodies that might exist.

These types of test are performed before the blood transfusion happens, in order to determine if the donor's blood is compatible with the receptor blood.

Cross-matching is also used to determine compatibility between a donor and patient, in organ transplantation. These tests are performed in Anti Globulin Human (AGH) between serum/plasma of the receptor (patient) and donor's erythrocytes.

The compatibility is determined by matching different blood group systems. Being the most important one's the AB0 and Rh system once these two are the most immunogenic groups.

The goal of the present work is to understand the importance of the compatibility tests before transfusions and transplants and also how they are performed.

TITLE: LABORATORY DIAGNOSIS OF AUTO-IMMUNE HEMOLYTIC ANEMIA, WARM-TYPE.

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The auto-immune hemolytic anemia (AIHA) is characterized by the premature destruction of the red blood cells (RBC) due to the fixation of immunoglobulins and the complement in the erythrocyte membrane surface.

The AIHA can be idiopathic, without any known cause, or secondary that is associated to another disease.

The warm-type is the most common type. In this case, usually warm autoantibodies are produced against the RBC, that are at our body temperature.

The IgG at 37ºC destroy the RBC on the endothelial reticulum, don´t activate the complement and also don't agglutinate "*in vitro*". About 98% of the IgG can be of the subclass IgG^1, when the antibody have specificity, is more often to react against antigens of the Rh system.

This anemia occurs more often in women than men.

In laboratory we can do direct Coombs tests, a hemogram with RBC count, reticulocytes count should be realized, as other lab tests, clinical examination and history. The direct Coombs test search for antibodies attached to the surface of RBC. This test is positive for the IgG, complement (c3d) or both.

In the Coombs test, the incomplete antibodies recovering the RBC, have a specificity to an antigen, sensitizing the RBC but not able to agglutinate. The serum of coombs is able to promote the agglutination in the RBC that are sensitized. Using this allows us to know if "*in vitro*" we have incomplete antibodies recovering erythrocyte membrane.

TITLE: LABORATORY STUDY HEMOLYSINS.

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The AB0 blood system, was first described in 1990 by Karl Landsteiner, and it stands until today as the most important blood system in transfusion. An AB0 transfusional mismatch will probably result in the patient's death caused by an intravascular hemolytic reaction.

The AB0 antibodies are present in the serum and they're considered natural and immune.

The natural antibodies are present in the serum from the third/sixth month after birth. Natural antibodies represent an immunoglobulins mix between IgG and IgM

The immune antibodies are activated by previous aloimmunizations (gestation or incompatible Ab0 immunization) or by heteroimmunization (Caused by animal or bacterial substances.). Immune antibodies are usually referred as hemolisyns because the acquire hemolytic capacity when reactive at 37º, the most part being IgG

The anti-A and anti-B antibodies from type 0 individuals are IgG class and may be present in high titles.

IgG are synthetized in the secondary immune response. Structurally, IgG are monomeric molecules that tend to combine themselves, and remain connected to the erythrocyte surface antigens, this allowing to detect the IgG I with the direct antiglobulin test.

Due to the fact that the IgG are small molecules, they possess the ability to get through the placenta. For this reason the newborn from type 0 mothers get a higher hemolytic disease of the newborn risk.

TITLE: SUDDEN DEATH AND HYPERTOPHIC CARDIOMYOPATHY - DIAGNOSIS AND THERAPY

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Sudden cardiac death is defined as death arising in the first sixty minutes after the start or worsening signs or symptoms of cardiovascular disease. In young people, the cause of sudden cardiac death is mostly in connection with cardiomyopathies among which hypertrophic cardiomyopathy. This is a heart condition characterized by left ventricular hypertrophy without heart or systemic cause that justifies it; is relatively common - has a prevalence of 1:500 individuals in the general population - and familiar in approximately 50% of cases. Has a similar distribution between the sexes, races and geographic regions. This disease is responsible for most sudden cardiac deaths, occurring mainly during exercise or after exercise, and it happens in apparently healthy young individuals. Nevertheless, this disease has a benign course with less than 1% annual mortality. The clinical manifestations appear at any time, which may occur after 50 to 25% of cases and about 40 to 50% of these patients have obstructive forms. A case will be discussed on hypertrophic cardiomyopathy as a possible cause of sudden death.

Keywords: Commotio cordis, sports, sudden cardiac death.

TITLE: SUDDEN CARDIAC DEATH IN SPORT

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Sudden cardiac death in sport, although rare, is a tragic event with great social impact. Despite the known benefits of physical activity for health, it appears that young athletes have an increased risk of sudden death compared with young people in the same age group that do not participate in any sport.

The cardiac etiology of sudden death in sport has been identified as the most prevalent. Within this, the congenital heart disease assumes prominence, being hypertrophic cardiomyopathy regarded as the main cause. However, sudden death may occur even in situations without an underlying disease, such as the Commotio Cordis.

Commotio Cordis or "Cardiac Concussion" results from direct trauma, non-penetrating and of low-intensity on the precordial region, wich has the ability to cause ventricular tachyarrhythmias and sudden death.

This phenomenon is more common among children and adolescents and occurs most frequently in baseball, softball, hockey, lacrosse and football.

Survival rate to Commotio Cordis is reduced, about 15%, hence the importance of adopting preventive strategies that encompass not only population's formation, but also the investiment in protective equipment and the provision of automated external defibrillation equipment in sports arenas.

Keywords: Commotio cordis, sports, sudden cardiac death.

TITLE: SUDDEN CARDIAC DEATH AND CHANNELOPATHIES

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Channelopathies are inherited diseases characterized by increased susceptibility to arrythmias and that, frequently, lead to sudden cardiac death, mostly in apparently healthy young people. Despite the substantial progress made in the past decades, approach and prognosis of these patients remains a controversial subject. The goal of this work became the search of parameters that help to estimate risk and collect information about markers that allow the assessment of these patients prognosis.

Previous symptoms, family history of sudden cardiac death, specific electrocardiographic findings and genetic features are the currently available markers for risk stratification. However, despite the similar pathophysiologic basis of these diseases, factors that seem to predict prognosis vary widely among them. For the Brugada syndrome, the presence of symptoms is the marker that predicts the biggest risk; but, in this disease, even gender seems to influence risk. In Long QT syndrome, the QTc interval is the most important predictor of SCD, while in Catecholaminergic polymorphic ventricular tachycardia, recent studies contradict the criteria for risk stratification defined by the European Society of Cardiology. In Short QT syndrome, the most recente channelopathy, studies carried out so far failed to identify any arryhthmias predictor.

Thus, doubts relating to risk stratification in channelopathies remain unclear, requiring large-scale studies with conclusive data. The clinical presentation varies widely among patients and as the sudden cardiac death threat remains, even in low risk patients many physicians opt for the placement of an implantable cardioverter defibrillator for prevention.

TITLE: SUDDEN CARDIAC DEATH IN ARRHYTHMIAS

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Sudden cardiac death is defined as death that arises within the first sixty minutes after the beginning or worsening signs or symptoms of cardiovascular disease. One of the biggest causes of sudden cardiac death is arrhythmias, such as ventricular fibrillation, which make the heart enable to pump blood and unless they are treated, death can occur within minutes. These arrhythmias may arise for various reasons (severe heart failure, short QT syndrome, hypertrophic cardiomyopathy, Brugada syndrome, arritmogenic right ventricular cardiomyopathy, etc)

This article from literature review will focus on arrhythmias caused by congenital syndromes (long QT syndrome, congenital short QT syndrome, Brugada syndrome and arritmogenic right ventricular dysplasia), citing a clinical case of a ventricular fibrillation caused by Brugada syndrome.

TITLE: SUDDEN DEATH PREVENTION AND TREATMENT

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Sudden death is an unexpected and dramatic event, being defined as death occurring no later than one hour after symptom onset, usually within minutes, not due to trauma or violence. Sudden death is the unexpected death caused by loss of heart function.

Sudden death is a major public health problem in the world, reaching more than 200,000 people / year in the US and 712 people / day in Brazil.

In adults, the main causes are heart diseases, and coronary artery disease. In people under 35, the main causes are congenital diseases.

Prevention of sudden death can be made through: the prevention of coronary disease and its risk factors, the cardiac evaluation of people with syncope history or family history of sudden death, the deployment of cardioverter - defibrillators and the deployment of automated external defibrillators (AED) in places where spend more than 2000 people / day. The DEA is self-explanatory and can be handled by anyone.

Definitive treatment of people can pass by investigating the causes and their treatment. The main causes are the treated coronary obstructions and arrhythmias. These often when diagnosed as malignant and potentially lethal arrhythmias may require the implantation of internal defibrillators. The examinations and further processing include cardiac catheterization, electrophysiological tests, angioplasty and implant "stents", the coronary artery bypass grafts and antiarrhythmic drugs.

TITLE: ***CLIMATE CHANGES AND HEALTH IMPLICATIONS***

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With intense and transversal consequences when it comes to society, climate changes are the biggest environmental threat of the XXI century. More than 30 projects of UNESCO in matters of cience and education contribute to the development of knowledge about this problem, which is taking even larger proportions.

The purpose of our study was to demonstrate the impact of climate changes in populations and cities. This method of working was by reviewing articles, news and documentaries about this particular subject, which describe the possibility of the ocean's level rising danger, due to climate changes, even though the impact could be devastating to overpopulated territories. Many countries live under the threat of the possibility of water shortage and the water level may rise within 0.5 to 1.4 meters by 2100, which can hazard various mundial areas but also our country's islands and coastal area, such as Tejo's estuary. Another big concern is Aveiro's shore which can withdraw 90 meters in only 30 years, consequently disappearing many beachs, leaving urban areas exposed and destroying agricultural fields. Only in the last half century, the regression rate of this shoreline area was 1.5 meters per year.

Bringing to a conclusion, by the years come by, the sea will invade cities, ending to completely destroy the beaches. If we mantain an inactive attitude about this issue, we take the risk of being exposed to extreme and unpredictable climate events.

TITLE: TOXINFECTIONS FOOD WORLDWIDE A PUBLIC HEALTH PROBLEM OF YESTERDAY AND TODAY

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Today we can see that the daily routines of people are completely different from a few years ago. There are some examples where we can observe and we can differentiate the present to the old times: expansion of the consumer market, economic globalization, change in eating habits and increased consumption of processed or produced food.

We research articles about food toxicoinfections in order to know the microorganisms that most often cause foodborne illness.

After the analysis, we found that the most common agents (over 50%) are *Salmonella spp* and *Bacillus cereus*, disseminated mainly in meat, vegetables and cereals, because they are widely distributed in nature.

The factors that contribute to these microorganisms multiply in food are: failure in controlling the binomial time / temperature during distribution and storage, handling errors, preparation with inadequate heat treatment and use of contaminated food ingredients which have not undergone processing before being consumed.

Therefore we concluded that it is necessary to comply with the rules by handlers, taking into account the good hygiene, storage and handling of food. This rules can avoid a serious public health problem.

TITLE: PSYCHOACTIVE SUBSTANCES CONSUMPTION IN THE GENERAL POPULATION IN PORTUGAL

Authors: Adriana Martins; Ana Filipa Vieira; Ana Rita Oliveira; Cristina Santos

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Drug use is a global problem and everyday scientific articles and studies on the subject are being published.

Which drugs are consumed, how often and which are the drugs consumers are fundamental data to understand a phenomenon that is well beyond the simple statistical analysis.

Given this situation, we conducted a detailed search based on scientific articles, population graphics, journalists information and the full range of information available on the internet and library.

Thus, the Third National Survey on Psychoactive Substances Consumption in the General Population, was held in Portugal in 2012, replicating studies conducted in 2007 and 2001 in the general population with 15-64 years of age living in Portugal.

It was found that in 2012, as in 2007 and 2001, cannabis was the illicit substance which registered the highest consumption prevalence throughout life, either in the total population (15-64) as in the young adult population (15- 34 years). These prevalences are respectively 9.4 and 2.7 in the total population, and 14.4 and 5.1 in the young adults.

It follows that monitoring and surveillance must be permanent and play an important role in society in general, so that these values may decrease in the future.

TITLE: RISK BEHAVIORS IN IPC'S STUDENTS

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More and more young people are aware of what they should adopt or not in the society. Although the increasing amount of information about risk behaviors, it is not always found the best control or decrease of the factors that influence these behaviors.

With this research, we intend to evaluate the college students' attitudes, related to their behavior that can endanger your health and others. It is also pretended to make a comparison with the results obtained in the past year, through the application of the same instrument, among the various organizational units of the Polytechnic Institute of Coimbra.

For our research we used, as methodology, the application of a validated questionnaire related to risk behaviors among college students and reviewed articles already published.

The results obtained, considering 300 responses, showed an increase of 1.7% of smokers, and, of these individuals, 63% smoked between 1 and 5 cigarettes per day (45 individuals). There are also 6.6% of them who consumed marijuana in last 30 days (more 1.6% than in 2014). Regarding to alcohol, 24.3% of the total individuals presented an exaggerated consumption, about 2-4 days per week. We noticed that 74.7% had never traveled with anyone drunk, and 91.7% didn't drive drunk in the last 30 days. According to unprotected sex and sexually transmitted diseases, 30% of the respondents always use a condom, and it was observed a decrease of 25%. However, only 12.7% had HIV test.

There so, according to these results related with tobacco and condom use, the values have undergone a significant change compared to the previous year and it is necessary to intervene to improve these percentages and sensitize the students in order to decrease risk factors.

TITLE: SEDENTARY LIFESTYLE AND PUBLIC HEALTH

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One of the major concerns over the last few years has been to understand the impact of a sedentary lifestyle in people's lives. A sedentary lifestyle is defined by a decrease or even a complete absence of physical activity and is induced by modern day life habits.

The present study is to spread what sedentary really means, what consequences it may have, what measures are in place to prevent such habits and expose the Portuguese reality in children and teenagers who attend schools from Lisbon and Bragança.

This study's methodology was based on the systemic review of two scientific articles that cover both children and teenagers and their sedentary habits.

The results show that there are some diseases that are associated with sedentary habits. The case studies show a high prevalence of inactive individuals (33,5%) and that 24,5% of teenagers mentioned watching TV for 4 or more hours a day. We also noticed that physical inactivity is more common in the females, lower socio-economic levels and obese individuals.

In Portugal the statistics show worrying numbers regarding sedentary habits in children, teenagers and the elderly, and there is still a lot to be done to reverse this trend. This is a field where Environmental Health Technicians have a lot of work to do in order to change the population's sedentary behaviors. This can be done through campaigns that promote physical activity and therefore reduce sedentary time, especially since several studies have shown the negative consequences of having an overall sedentary lifestyle.

TITLE: SOCIAL DETERMINANTS IN HEALTH PUBLIC

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Throughout history the risk factor and disease relationship was associated with bacteriological factors as single agents responsible, but nowadays this relationship is no longer valid because the social determinants influence. At present, social conditions are referred to as evolutionary element of public health. The objective of this study is to know and emphasize the importance of social variables on population health, promote equity, find solutions for a better quality of life finally answer the question "as the economic and social stratification can "enter" the human body"? Most of the information collected is based on the global conferences, several national delegations (Portugal and Brazil) and specialists (case studies). Based on the selected data we used a bibliographic methodology strategy, comparison between opinion and models of many researchers and an analysis of social variables more revelant in public health with the respective required performances. The approach taken in the selected information is associated with a generic definition, social determinants that are economic, cultural, racial, psychological, and behavioral factors that influence the occurrence of health problems and their risk conditions in the population. It was found that social determinants are most harmful to the relative risk of disease than several individual risk factors such as tobacco, cholesterol, high blood pressure, respectively, values of 60-65% and 35-45%. It invigorated many more examples of inequity in health, influenced by social constraints. It is concluded that the importance of social determinants for public health is essential to make a balanced and stable society.

TITLE: VECTOR-BORNE DISEASES

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The vectors (such as mosquitoes and ticks), transmit the disease through a sting, when themselves are carriers of pathogens. Just one bite might transmit diseases like malaria, dengue and Lyme's disease, amongst others. Even though these diseases happen usually in tropical areas (or in places where access to potable water or basic sanitation can be a problem), in the last few years there has been a dissemination to other geographical areas. This propagation can be facilitated by many factors, namely increasing travelling and international commerce, the introduction of new agricultural practices and mostly climate changes.

The main goal is to transmit the prevention measures to the vector-borne diseases.

The methodology was based in the systematic review of scientific articles and other sources of information on the topic.

After the review of several studies we found that malaria was estimated to be the cause of 584.000 deaths in 2013; the disease with the fastest growth is dengue and it's estimated that may occur about 390 million infections by the virus with 96 million potential patent cases; in the last 20 years there were detected over 360.000 cases of Lyme's disease; about 30% of the severe cases of Japanese encephalitis are deadly; the mortality rate from yellow fever varies between 15 and over 50%.

It is concluded that the vector-borne disease such as malaria, dengue, yellow fever, amongst others, are of health concern worldwide, since more than half of the population is at risk. Thus, the function of the Environmental Health Technicians is to identify the highest risk areas of the vectors development, by making samples, participating in the evaluation of risks to the population through applying specific prevention and controlling measures against the vectors.

TITLE: EBOLA VIRUS INFECTION A PUBLIC HEALTH PROBLEM

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Ebola, previously known as Ebola hemorrhagic fever, is a rare and deadly condition of infectious character that manifests itself in humans and some primates. Ebola is caused by a virus of the Filoviridae family, Ebolavirus gender. Five different species of the virus were identified, four of them causing disease in humans.

We aim to give information about the disease to society in order to warn of possible symptoms. To make known that Ebola is, effectively, a problem of public health due to its quick and easy contagion and that, even thou its difficult to control and spread, the role of the public health facilities is still essential in a case of an Ebola outbreak.

The methodology used for the preparation of this article was to review scientific papers and other documents on the subject.

In October of 2014, the number of confirmed cases was 13.703 and the number of deads was 4.920. The african countries are still the most affected, particularly Liberia, Sierra Leone and Guinea. In its most recent outbreak, the disease has reached global proportions and hit America and Europe. Still in October, between the health professionals practicing in Africa were detected 401 infected and 232 deaths. According to OMS the disease has a 70% lethality rate.

We conclude that the public health has a crucial role in preventing the disease, but in the case of Ebola it's difficult. Its work can be facilitated by an informed society that is also an integral part of the role of public health.

TITLE: SEXUALLY TRANSMITTED DISEASES

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Teenagers are usually seen as a group at particular risk of becoming involved in compromising health behaviors, such as unprotected sexual activity. Global statistics indicate that sexually transmitted diseases (STDs) are more likely to affect people living in deprived areas of major cities, despite these diseases continue to be a risk for those who are sexually active. Regardless of age, gender or socio-economic conditions. We aim to find out what the most common STD in Portugal/World. The methodology used in this bibliographic review on the topic. From the approach to information associated with a generic definition of HIV, other STDs, which are caused by sexual contact. It was found that only STD gonorrhea can be treated since it is timely, since the remainder are detected only when they are already too advanced having no cure. Through bibliographic data found that HIV in Portugal has the highest mortality rate in the Lisbon and Tejo area. Despite this and globally there has been a decline of persons infected with HIV, being total 1416/3500 (data regarding the month, 2013). For the other STDs is the most frequent chlamydia infected with 170,000 people, followed by gonorrhea about 105,000 people infected, then genital herpes infected with 39,000 people, and then in people infected with syphilis 2000 to 3000. We conclude that it is pertinent information to the general public, not only preventive measures but also in promoting healthy behaviors.

TITLE: EVALUATION OF MICROBIAL CONTAMINATION OF AIR, WATER AND SURFACES IN INDOOR SWIMMING POOLS OF TYPES I AND II.

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The demand and consequent increase in the number of users of indoor swimming pools for sport, recreational and/or therapy has known a great development in recent years. However, to the recognized benefits associated to these places have been identified as a potential biological hazards to the Public Health. The main biological risk factors are related with poor water quality of pools (inadequate disinfection, high temperature and insufficient water renovation), structural and functional features, and/or with the overcrowding. These factors with repercussions on the health of users, for its part join an unconnected legal framework, and of scope restricted. At present, the swimming pools are used by individuals of all ages, including by more susceptible populations (children and elderly). Pool water may be cause of some diseases, including ear infections, conjunctivitis, pharyngitis, skin diseases and irritation of skin and mucous, it is essential to ensure their microbiological quality. Although the pool water constitutes the main source and mode of transmission of microorganisms, the humid atmosphere and the presence of hot and wet surfaces characteristics of the indoor pools, can also promote the proliferation and accumulation of pathogenic microorganisms. It is imperative to assess the exposing of users and the professionals themselves at the pools to biological risks, as well as the conditions for their development. Thus, the present study based on assess the degree of contamination by microbiological agents in indoor swimming pools of type I and II, through air sampling, water and surfaces, and further laboratory analysis.

Keywords: Indoor swimming pools; Microbial contamination, public health.

TITLE: CRYPTOCOCCOSIS …AND CONSTRUCTION WORKERS

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Infections are a major problem in the health of the general population. Of the several possible causes, we will to address in particular those caused by a seemingly unsuspicious agent. Pigeons are present in all cities and are the primary vehicles of transmission of the fungus called Cryptococcus neoformans. This infection can result in harmless colonization of the airways, but it can also lead to meningitis or disseminated disease, especially in persons with fragile immunity. Some studies show that the increase in immunosuppressed patient populations has correlated with a rise in clinical fungal infections, including cryptococcosis. The construction workers are particularly exposed to this problem, because in the reconstruction process of buildings, especially in cities where the population of pigeons is larger, the contact with the pathogen is constant. A better understanding of the host and pathogen contributions to disease etiology will provide options for targeted treatment strategies.
The purpose of this study is to show that the construction workers are exposed to *Cryptococcus neoformans* and thus involving an occupational hazard that require monitoring.

Keywords: Cryptococcosis, construction workers, pigeons.

TITLE: PREVENTION OF URINARY INCONTINENCE IN THE POSTPARTUM PERIOD THROUGH A TRAINING PROGRAM / EXERCISE.

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Introduction: The risk for urinary incontinence can be 2.6 times higher in women after pregnancy and childbirth compared with women who are not at this time. It is estimated that the prevalence of urinary incontinence after childbirth is 67%. **General aim:** The purpose of this article is to verify the effectiveness of a training program in the prevention of postpartum urinary incontinence. **Methodology:** Surveys were conducted in the Pubmed and Scielo databases, with the keywords "Kari Bo", "Urinary Incontinence", "Prevention of urinary incontinence after delivery", "Postpartum", "Pelvic Floor" and "Exercises", related each other. **Results:** According to the search 5 articles were selected, particularly, a systematic review, a prospective clinical trial enrolling and randomizing, a cohort study and a randomized controlled trial. Strengthening exercises during pregnancy and after childbirth can prevent and treat urinary incontinence. Some studies have indicated that the development of urinary incontinence from six weeks to three months after delivery reduces significantly with exercises for the pelvic floor muscles. Therefore, a training supervised protocol is recommended based on muscle strength training, emphasizing maximal contractions. **Conclusions:** Strengthening exercises for the pelvic floor can be effective in reducing the development of urinary incontinence and increased muscle strength of the perineal muscles. So, a training program added in pregnancy and postpartum improves the resistance of the pelvic floor muscles, improving the level of quality of life for women after childbirth. This strength training is effective with supervision and should be incorporated as a routine part of women exercise. Still, further studies of high quality are needed to confirm this hypothesis, especially after childbirth.

TITLE: THE EFFECT OF EXERCISE IN BREAST CANCER PREVENTION IN POSTMENOPAUSAL WOMAN

Authors*: Rita Martins; Tânia Maurício*

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Abstract:

Background: Breast cancer is the second most frequent type of cancer in the world. It´s the most common among women and it´s estimated to affect more than one million women annually. In Portugal, the incidence of breast cancer has been increasing. Postmenopausal woman have increased risk due to hormonal factors. The literature suggests that exercise has a protective effect on breast cancer risk. **Objective:** The aim of this paper is to do a literature review to understand the effect of exercise in reducing the risk of breast cancer in postmenopausal women. **Methods:** A search in the literature was conducted in the databases Pubmed, PEDro, Cochrane, Lilacs, Sciencedirect and B-on for studies from 2009 to 2015. The studies were chosen according to the following inclusion criteria: exercise or physical activity performed by postmenopausal women and articles in English. The studies with women diagnosed with breast cancer were excluded. **Results:** 16 articles were analyzed given the inclusion and exclusion criteria. The majority of the studies reported that performing exercise of moderate-to-vigorous intensity after menopause contributes to reduce the risk of breast cancer in postmenopausal women. **Conclusion:** The literature supports that the exercise is associated with reduced postmenopausal breast cancer risk. However there is no specific evidence of the frequency and type of exercise more effective in the prevention of breast cancer.

Keywords: exercise, physical activity, breast cancer, postmenopausal; prevention.

TITLE: EFECTIVENESS OF PHYSICAL EXERCISE/ACTIVITY IN PREVENTION OF COGNITIVE DECLINE – LITERATURE REVIEW

Authors*: Rui Lopes[1], Sara Luís[2]*

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Introduction: Cognitive decline is associated with aging and can become a personal, social or economic problem since it can be a precedent of dementia. Research shows that exercise is the key to improve cognitive performance preventing its' decline.

This review has the objective to show the effectiveness of physical exercise/activity in the prevention of cognitive decline and the mechanisms by which this occurs.

Methods: Research was conducted in PubMed, LILACS, SciELO, b-on, and the Google search facility for the gray literature. Having found a review with meta-analysis dated 2014, research was limited to the years 2014-2015. References were surveyed whenever revealed important.

Results: Positive effects of exercise on modifiable risk factors and brain structures have been identified as an asset for cognitive performance. Observational studies indicate that high levels of physical activity are protective of cognitive decline and interventional studies prove that the combination of physical and cognitive exercise can improve cognitive performance in aging population.

Discussion: Observational studies have greater follow-up times, concluding that higher levels of physical activity prevent cognitive decline. Interventional studies, with smaller ones, only conclude the positive direct effect of exercise on cognition, without determining if it prevents long-term cognitive impairment. Clarifying the ideal parameters of the exercise interventions is needed, but aerobic and resistance exercises combined with cognitive exercises seems to be an effetive strategy.

Conclusion: Aerobic and resistance exercises, in adulthood or old age, show positive results in preventing cognitive impairment, particularly when associated with cognitive stimulation.

Keywords: exercise, prescription, prevention, decline, cognitive.

TITLE: EXERCISE EFFECTIVENESS IN PREVENTION OF COGNITIVE FUNCTION DECLINE IN PATIENTS WITH ALZHEIMER DISEASE

Authors*: Tânia Miguel, Sílvia Vaz*

Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal, Dept. de Fisioterapia*

Objective: There is growing evidence of the benefits of exercise on improving the cognitive functions of the general population. There is, however, a gap in relation to those benefits in individuals with Alzheimer's especially with regard to whether the practice of exercise can prevent or delay the decline of cognitive functions associated with this disease. The objective of this study was therefore to review the evidence that looked into the effect that physical activity could have with regard to the cognitive performance at older adults with Alzheimer's in its early stages. **Methods**: We examined scientific research articles in PubMed, PEDro, ScienceDirect publications dated between 2010 and 2015 with the following keywords: "Alzheimer Disease", "Exercise", "Cognitive Function" and “Prevention". **Results**: Eight studies were found that met the inclusion criteria for this present work. These studies showed that exercise helps to improve, at least temporarily cognitive functions in patients with early stage Alzheimer's. This has particularly evidence in regards to language, attention, memory and executive function. It has also been shown that physical inactivity can led to a much faster decline in cognitive functions. **Conclusion**: Regular physical exercise seems to contribute to the preservation or improvement of cognitive functions in patients with early stage Alzheimer's. However, it is noteworthy that the exercise protocols have been quite diverse, and that some of them were not sufficiently well defined to be applicable in clinical practice.

Keywords: Alzheimer disease, Exercise, Cognitive Function, Prevention

TITLE: O EFEITO DO EXERCICIO NA PREVENÇÃO DE QUEDAS NOS IDOSOS – REVISÃO DA LITERATURA.

Authors*: Liliana Ferreira.*

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Background: Falls are the dominant cause of injury among elderly. Deaths due to injuries are only the tip of the iceberg. In the EU every day 15,000 elderly sustain an injury severe enough to seek medical care, out of whom 5,500 are ending up in a hospital and 275 eventually die, whereas several hundred never get back home as they enter a nursing home.
Objective: Identify and analyze the effects of physical exercise programs on the reduction of the risk of falls in adults above the age of 60. Methods: We used studies published in journals indexed in international database. To search the information sought by the corresponding descriptors Elderly, fall and Exercise, and having as limit the years 2012 to 2015. Hence, 7 articles were included in the study. **Results:** The multicomponent exercise programs were the most frequent. The multicomponent exercise intervention composed by strength, endurance and balance training seems to be the best strategy to improve rate of falls in older adults. **Conclusion:** The different exercises programs are effective in preventing falls of older adults. The multidisciplinary support is based in the preventive practices of falls and therefore needs an attitude of shared information between health professionals.

Keywords: Older Adults; Fall risk; Exercise; Community.

TITLE: WHAT IS THE EFFECTIVENESS OF EXERCISE ON SMOKING CESSATION TO PREVENT CLINICAL COMPLICATIONS OF SMOKING?

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Affiliations: *Escola Superior de Tecnologia da Saúde de Coimbra (ESTeSC), Instituto Politécnico de Coimbra, Coimbra, Portugal, Dept. de Fisioterapia*

Background: Cigarette smoking is one of the main risk factors for the occurrence of clinical complications such as cardiovascular diseases, cancer or hypertension. Currently the most common methods to quit smoking are the behavioral counseling and pharmacological therapy, however its success rate remains quite low. New interventions are needed to increase the efficacy of smoking cessation. **Objective**: To analyze which is the effectiveness of exercise on smoking cessation, in order to prevent the clinical complications resulting from smoking. **Data source**: The following databases Pubmed, Cochrane Library, PEDro and Scopus were consulted during the months of March and April 2015. **Eligibility criteria**: The research was limited to guidelines, meta-analyses, systematic reviews and randomized controlled trials, written in English and published in scientific journals over the past 5 years. To be valid the article should have as population people with smoking habits who performed an exercise program as intervention, in comparison to its non-application. The wanted outcome was the percentage of subjects who stopped smoking long-term. **Results**: It was considered valid to analysis in this literature review eight randomized controlled trials that analyzed programs with aerobic exercises, endurance and relaxation. **Limitations**: The absence of some information about the characteristics of the exercise programs, the existence of experimental errors, and the fact that the research be restricted to English language articles only. **Conclusions**: An aerobic exercise program with duration of 12 weeks showed the best results on smoking cessation.

Keywords: Exercise, physical activity, exercise program, smoking cessation, cigarette smoking, primary prevention.

TITLE: EFECTIVENESS OF PHYSICAL EXERCISE/ACTIVITY IN PREVENTION OF COGNITIVE DECLINE – LITERATURE REVIEW

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Introduction: Cognitive decline is associated with aging and can become a personal, social or economic problem since it can be a precedent of dementia. Research shows that exercise is the key to improve cognitive performance preventing its' decline. This review has the objective to show the effectiveness of physical exercise/activity in the prevention of cognitive decline and the mechanisms by which this occurs. **Methods:** Research was conducted in PubMed, LILACS, SciELO, b-on, and the Google search facility for the gray literature. Having found a review with meta-analysis dated 2014, research was limited to the years 2014-2015. References were surveyed whenever revealed important. **Results:** Positive effects of exercise on modifiable risk factors and brain structures have been identified as an asset for cognitive performance. Observational studies indicate that high levels of physical activity are protective of cognitive decline and interventional studies prove that the combination of physical and cognitive exercise can improve cognitive performance in aging population. **Discussion:** Observational studies have greater follow-up times, concluding that higher levels of physical activity prevent cognitive decline. Interventional studies, with smaller ones, only conclude the positive direct effect of exercise on cognition, without determining if it prevents long-term cognitive impairment. Clarifying the ideal parameters of the exercise interventions is needed, but aerobic and resistance exercises combined with cognitive exercises seems to be an effective strategy. **Conclusion:** Aerobic and resistance exercises, in adulthood or old age, show positive results in preventing cognitive impairment, particularly when associated with cognitive stimulation.

Keywords: exercise, prescription, prevention, decline, cognitive.

TITLE: EFFECTIVENESS OF PHYSICAL ACTIVITY IN WORK CONTEXT

Authors*: Carla Guapo; Sara Martins*

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Introduction: Physical Activity (PA) in the work context is a preventive method of work-related musculoskeletal disorder allowing the improvement of the quality of life in this environment. This research aims to address the effectiveness of PA in the employment context, raising awareness about the importance of health promotion for the worker. **Methodology:** This article is a review of the literature, in which the document retrieval was performed using the following databases: SciELO, PubMed, Google Scholar, between 9 and 16 march 2015. References in were subjected to a time-limit (less than 5 years old). This research obtained as a result 428 studies, of which 6 were selected, based on titles and abstracts, by order of relevance, excluding those that were not related to the subject of review and that mentioned diseases and their symptoms, in order to take into account studies regarding health promotion. **Results:** Research with the keywords listed reveal 6 studies after filtering described. **Conclusion:** After this research, it is clear that the practice of this activity is an important motivational tool for changing lifestyle of individuals, being advantageous for both companies and for the worker.

Keywords: Physical Activity at Work. Prevention. Workplace Exercise. Efectiveness.

TITLE: THE PRACTICE OF PHYSICAL ACTIVITY IN PREVENTING DEPRESSION.

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Depression is a major cause of disability, it is estimated that in 2030 will be the leading cause worldwide. It is characterized by a mood disorder with a wide variety of symptoms (physical, psychological and behavioral). Can lead to suicide, labor abstention, social and family isolation, affecting any age. The World Health Organization recommends physical activity as a means of prevention and treatment of many diseases, including depression. Being depression a public health problem and physical activity a means of effective and economic intervention, the aim of this study focuses on the analysis of the literature on the effectiveness of physical activity in preventing depression and identifying physical activity programs (frequency, intensity, duration and type) suitable for this purpose. The literature review was conducted in the databases: PubMed, ScienceDirect, B-on, during March 2015, through the keywords: depression, physical activity, exercise, prevention. It included systematic reviews, observational and experimental studies based on physical activity as means of preventive depression risks, published in the last ten years, obtaining 12 eligible articles. Physical activity programs differ between authors, but most show satisfactory results in preventing depression. Aerobic exercise, moderate to vigorous, once a week, for 10 min/day was found to produce the lowest effect on risk of depression. The available evidence suggests that physical activity decreases the risk of developing depression or symptoms of depression. Studies with more homogeneous methodologies on developing physical activity programs are required to promote a greater effect in preventing depression.

TITLE: THE EFFECT OF EXERCISE IN BREAST CANCER PREVENTION IN POSTMENOPAUSAL WOMAN

Authors*: Rita Martins; Tânia Maurício*

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Background: Breast cancer is the second most frequent type of cancer in the world. It´s the most common among women and it´s estimated to affect more than one million women annually. In Portugal, the incidence of breast cancer has been increasing. Postmenopausal woman have increased risk due to hormonal factors. The literature suggests that exercise has a protective effect on breast cancer risk. **Objective:** The aim of this paper is to do a literature review to understand the effect of exercise in reducing the risk of breast cancer in postmenopausal women. **Methods:** A search in the literature was conducted in the databases Pubmed, PEDro, Cochrane, Lilacs, Sciencedirect and B-on for studies from 2009 to 2015. The studies were chosen according to the following inclusion criteria: exercise or physical activity performed by postmenopausal women and articles in English. The studies with women diagnosed with breast cancer were excluded. **Results:** 16 articles were analyzed given the inclusion and exclusion criteria. The majority of the studies reported that performing exercise of moderate-to-vigorous intensity after menopause contributes to reduce the risk of breast cancer in postmenopausal women. **Conclusion:** The literature supports that the exercise is associated with reduced postmenopausal breast cancer risk. However there is no specific evidence of the frequency and type of exercise more effective in the prevention of breast cancer.

Keywords: *exercise, physical activity, breast cancer, postmenopausal*; *prevention*